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Paper Exhibit Opens at Chicago's World Fair

Approximately 150 Paper Executives Participate in Formalities of Dedication of Paper's Century of Progress—Booth Occupies 21,000 Sq. Ft. of Floor Space and is Equipped With More Than Sixty Displays—Includes Complete Paper House, Seventeenth Century Paper Making Equipment and a Modern Paper Making Machine

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., June 5, 1933.—Over in General Exhibit Building, section two, of the Century of Progress Exposition in Chicago, the paper industry has an exhibit it can well be proud of. Occupying 2,100 square feet of floor space, prominently located, equipped with over sixty sterling individual exhibits; a complete paper house, modern paper making machine, 17th century paper making equipment and plenty of cards telling the importance of the paper industry, "Paper's Century of Progress" was formerly dedicated on June 1, when nearly 150 paper executives and their families participated in the formalities. The ribbon barring the door to the exhibit was cut by Mrs. Noble Gillett, wife of the head of the Chicago Paper Company, after a brief but effective dedicatory talk given by Phil Howard, managing director of the Paper Foundation, Inc. Representatives of the big majority of the various paper associations were present and given due credit by Mr. Howard for their participation in the long hard job of putting the exhibit over.

From now on the paper industry will be in full parade before thousands and thousands of interested citizens. Inasmuch as the Century of Progress is drawing record crowds already, by the time Paper Day rolls along on September 1 the world should be pretty well convinced of the importance of the seventh greatest industry. The individual exhibits are well placed to set off the qualities of the paper products—and virtually every kind of paper made is to be found in one or the other of the sixty display cases, all marked with proper identification cards. The House of Paper is completed except for rows of paper flowers which will give a garden effect around the front of the "House". Inside, every conceivable use of paper in the home is effectively displayed. The 17th century press, prepared by the Institute of Paper Chemistry, includes the old time press, tub and dryer. It and the modern machine, which is the property of American Writing, are certain to attract huge crowds, as will the table display showing all the processes of paper from the tree to the finished product. A "roll of honor", on which visitors will inscribe their names as a part of a petition to be formally presented to Congress in an effort to regain the two cent postal rate, is another outstanding, and practical, feature of the exhibit. Experienced attendants, including W. B. Wheelwright, will be at the exhibit constantly to provide individual exhibitors and the entire paper industry with a chance to get full value for this project.

The many paper executives present at the dedication ceremonies on June 1 expressed surprise at the completeness, effectiveness and attractiveness of the Paper Exhibit and were loud in their praises of the Paper Foundation for the work it has done. Incidentally, the same group were equally positive in their praise of the Century of Progress itself—a noteworthy achievement in the face of long odds. The Middle Western Division of the Salesmen's Association of the Paper Industry evidenced its appreciation of and interest in the exhibit by sending a huge floral bouquet to start the exhibit off right. The paper industry is urged to view this remarkable display of paper and paper products some time during the coming months. Daily new features—and new exhibitors—are being added and, without a doubt, the paper industry has as an effective portrayal of its power and products as any other single industry on the immense grounds.

For the benefit of the Century of Progress exhibitors, the *Chicago Tribune* has also arranged, in Tribune Tower, a paper exhibit that is bound to help the industry. A part of the exhibit shows the methods used by the *Tribune* in getting news print and the production stages are shown, from the timber land product to the finished news print. Large crowds have already seen the display, even at this early date.

Demand for Paper Better

The Chicago paper market is, for the first time, unanimously filled with good news. Nothing sensational has happened, but the conviction that a change for the better has taken place is growing daily. Meetings, too numerous to mention, have been held by various groups interested in getting their house in order. These have aided materially in strengthening markets. A very marked increase in the volume of fine paper sold in May over April is reported by mill representatives. Jobbers have by no means felt the full effect of this improvement yet but conditions

(Continued on page 25)

Wisconsin Paper Mills Water Power Problem

Contemplated Construction by Wisconsin Valley Improvement Co., of Storage Reservoir and New Hydro-Electric Plant, Would Solve Difficulties For All Time—Assembly Passes Bill Granting Increased Flowage and Construction Rights

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., June 5, 1933—Providing legislative hurdles can be surmounted, paper mills of the Wisconsin River Valley will be able to solve their water power difficulties for all time through the contemplated construction by the Wisconsin Valley Improvement Company, Wausau, Wis., of storage reservoirs and a new hydro-electric plant estimated to cost $5,011,874. A bill granting the necessary flowage and construction rights has already passed the Wisconsin Assembly by a large majority, and will be the subject of senate hearings within thirty days before it is taken up for passage by that body.

The Wisconsin Valley Improvement Company is an organization made up of mill dam owners along the Wisconsin River, including the paper mill areas at Tomahawk, Merrill, Wausau, Marathon, Stevens Point, Wisconsin Rapids, and other points. George W. Mead, president of the Consolidated Water Power and Paper Company, is president, and H. L. Geisse, general manager of the Wisconsin Valley Electric Company, is secretary of the Improvement company. Mr. Mead is one of the prime movers in the project, and the plans were drafted by W. F. Thiele, chief engineer of the Consolidated company.

Mr. Mead and the late George A. Whiting were instrumental in organizing the Improvement company years ago when the problem of water supply was a serious one. They succeeded in gaining supervision of a series of logging dams on the upper Wisconsin River so as to hold surplus water in a chain of connecting lakes in northern Wisconsin. The present storage capacity is 9,000,000,000 cubic feet of water, and the proposed project would increase the reservoir facilities to 23,000,000,000 cubic feet. This supply would effectively overcome the periods of low water, especially in January and February, and during midsummer periods of drought.

Plans prepared by Mr. Thiele provide for two vast reservoirs, one of the Big Eau Pleine River and another on the Little Eau Pleine River. These would be connected by a short concrete tunnel. Control dams would be built for each at their junction with the Wisconsin River, so as to hold a head of water thirteen feet above the storage level of the Wisconsin. The reservoirs will require 70,000 acres of land for flowage purposes. Approximately 20,000 acres of this land already have been purchased, and options have been obtained on large additional tracts. The land purchases alone will exceed $500,000.

Another important feature of the plans is the construction of a hydro-electric dam on the Wisconsin River at Knowlton, at an estimated cost of $1,644,000. Another reservoir would be created above this dam, requiring 10,407 acres of flowage lands, most of which have been acquired at a cost exceeding $300,000. Transmission lines are to be built from the power station to connect with other power units along the river.

Physical changes in the flowage area will mean the outlay of a large sum. Trunk highways and side roads must be re-routed or raised to a higher level, tracks of a railroad serving that locality must be raised, and bridges and new roads must be built. The company expects to undertake all of this work out of its own funds as a consideration for the right to establish the reservoirs. Estimated cost of the reservoir on the Big Eau Pleine River is $600,000, and that of the Little Eau Pleine River, $2,767,530.

Under provisions of the bill introduced in the state legislature, the company would be authorized to issue bonds, on authority of the Wisconsin Public Service Commission, to an amount not exceeding one-half of the total cash investment of the reservoir system. The company would also be authorized to collect tolls upon all logs, timber and other floatables driven or floated on the Wisconsin River in the area served, and to collect tolls from the owners of the improved water power on the river when the reservoirs attain a storage capacity of two billion cubic feet of water. The aggregate of the revenue is to be sufficient to pay the cost of operation and maintenance and a net return of seven per cent on the cash capital actually paid in, and on the par value of bonds issued.

While some opposition is anticipated in the legislature, most of the land owners in the flowage area are favorable to the project because it will require 492,000 man days of labor, the hauling of 3,000,000 yards of dirt, and the quarrying and hauling of 35,000 cords of stone for riprapping. The prospect of widespread employment for laborers and farmers therefore augurs favorably for final authority to proceed. Izaak Walton League chapters in Wisconsin River cities are also backing the project, because hunting and fishing will be provided in an area where it did not exist before. Riparians who have suffered flood damage in the past also endorse the movement, because the vastly increased storage will remove the past flood menace during high water stages because of ample facilities to impound all surplus water until needed for water power.

To Increase Federal Forest Areas

Federal forest areas in Wisconsin will be increased 600,000 acres this year, according to the outlook expressed by E. W. Tinker, Milwaukee, regional U. S. forester for Wisconsin, Michigan and Minnesota. Approval was given two years ago for the purchase, but the deals were held up as a matter of economy. With the appropriation of large sums for conservation as an employment remedy, the fund of approximately $1,200,000 necessary for the purchase no doubt will be authorized. These purchases include the Mondeaux Forest in Taylor County, the Oconto Forest in Oconto and Langlade Counties, and the Chequamegon Forest, in Ashland and Sawyer Counties.

Receives Wood Pulp Supply by Water

The Marinette and Menominee Paper Company, Marinette, Wis., is receiving a large part of its wood pulp supply by boat this year, using docking facilities on Lake Michigan at Menominee, Mich. The Canadian freighter, *Myrtis*, arrived last week with a shipment of 600 tons.

S. F. Shattuck Honored

S. F. Shattuck, vice president of the Kimberly-Clark Corporation, Neenah, Wis., has been honored with election as a member of the general council of the Presbyterian church in the United States. He was named at the recent

General Assembly at Columbus, Ohio. He has served two previous terms on the council.

Correction

M. J. Ketter, general superintendent of the Hoberg Paper and Fibre Company, Green Bay, Wis., points out that Stanley Fruzen, who met with a fatal accident recently, was not an employee of the Hoberg Paper and Fibre Company, as incorrectly stated in the May 25 issue of the PAPER TRADE JOURNAL. Mr. Ketter states that the Hoberg Paper and Fibre Company is receiving wood by boat under contract, which is being delivered into the company's booms; from there on the company takes charge. Stanley Fruzen was employed by the steamship company, the Canada Forwarding Company, which holds the contract for delivery of wood to the company's booms.

Indianapolis Seasonably Active

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., June 5, 1933—The holiday last week cut into the volume but the total was about the same as the year before and there continues to be a lot of optimism among leaders in the trade. Really hot weather has stimulated the demand for summer specialties. Paper napkins, towels, plates and similar merchandise is moving more rapidly. There are no large stocks in retailers' hands and any demand is reflected almost immediately on the local jobbers.

A new line here that is being pushed by the Crescent Paper Company is an assortment of cellophane bags designed to wrap fruit and other edibles which are stored in the refrigerator. There has been a lot of the merchandise sold and stocked. Two of the largest department stores in the city are pushing this merchandise in their displays and publicity and the housewife is taking it to heart. Melons, grapefruits, foods that may by odor scent other foods, crackers that may become stale and other foods are wrapped in cellophane for protective measure.

One of the most significant features of the market is the increasing amount of newsprint being used. This is particularly true of newspapers in the industrial cities of the state where there has been more employment and where the advertisers have come to life. During this entire economic period the Indiana editors have admitted their greatest loss was from domestic sources. The national advertisers have carried the largest proportionate space and their curtailed budgets have not been reduced nearly in the same degree as those of the domestic advertiser. Now that the smaller advertiser again is entering the lists there is hope for an ever increasing volume of newsprint use.

It seems to be the opinion here that if the trade can hold such gains as have been made during the dull months of mid-summer, the fall will see something really worth talking about. It is conceded that periodic recessions in business will come, but the idea seems to minimize them as much as possible.

Now Jewel Paper Corp.

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., June 5, 1933.—A certificate was filed this week denoting a change in the name of the Jewel & Peck Paper Corporation to the Jewel Paper Corporation. A reorganization of the company was effected recently when Ralph C. Peck disposed of his interest to Corwin T. Jewel. Mr. Jewel plans to continue the business under the same policy as heretofore. The company was established about a year ago to deal in paper products.

New York Mill Increases Activities

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., June 5, 1933.—An improvement in conditions is reflected in reports from prominent paper mill centers in this section during the past few weeks. Orders are reported coming in more rapidly with the result that many old employees have been recalled to work in numerous plants. The outlook now is considered more promising than it has been in several months.

At the Mechanicville plant of the West Virginia Pulp and Paper Company signs of increased operations are noted and an enlargement of the working force has been made. An unexpected rush of orders has resulted in the taking on of about 35 additional hands and the starting up of another paper making machine. For the past few months only a portion of the equipment has been in operation on reduced schedules with a skeleton working force. Indications are that from now on the entire equipment will be kept operating steadily in order to care for the rapidly increasing volume of new business.

Increased activity is also seen at paper mills in Cohoes where the two largest concerns have resumed work on a more extensive scale. At the plant of the Mohawk Paper Makers, Inc., a number of employees who were laid off some time ago have been recalled and operations are being conducted on a better basis than for some time. At the Gledhill Paper Company operations have been resumed after a shut down of several weeks and officials regard the outlook as most promising. Many of the former employees have returned to work at this plant. The curtailment of activities in both plants some months ago threw many persons out of employment and the stimulated business has already made itself felt.

Reports from Corinth show a trend upward in conditions where the branch of the International Paper Company is now running on better schedules than in several months. Virtually all equipment is now in operation following the starting up of another machine during the past week. A number of the old employees have also been recalled.

Pacific Coast Mill News

The Everett Pulp and Paper Company, Everett, Wash., has named James G. Ramsey formerly associated with Eastern book paper manufacturers, as superintendent of their plant to succeed George MacNaughton.

Carl B. Everitt is the new superintendent of the Columbia River Paper Mills plant at Vancouver, Wash., taking over the duties of M. F. Herb who died recently. Mr. Everitt was employed by the Puget Sound Pulp & Paper for a number of years before taking his new post.

The St. Helens Pulp and Paper Company at St. Helens, Ore., has announced the appointment of C. P. R. Cash, formerly plant superintendent of the Cascade mill at Tacoma, Wash., and more recently with the Union Bag Company, there, to its executive staff.

The Hawley Pulp and Paper Company officials have named Fred Weleber chief chemist of its Oregon City unit to fill the breach caused by the departure of Ray Schadt who has joined the Crown Willamette Paper Company. Mr. Weleber is well known to the paper and pulp fraternity and has been with the Hawley people for a number of years.

Alterations to the Crown Willamette Paper Company's plant at Camas, Wash., will provide an additional 10,000 feet of floor space to the property. The building is being raised and a ground floor built-in in order to gain larger working facilities.

Paper Mill Activity Increases In Ontario

Fine Paper Manufacturers Disposing of Products on Operations of From Four to Five Days Weekly—Volume of Wholesale Paper Sales Expanded During May—More Inquiries Being Received for Future Account Than for Some Time Past

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., June 5, 1933—May record of sales in wholesale paper in Ontario closed with a slight increase in volume and there is a prevalent feeling that the worst of the paper depression is over. The month exhibited a tendency toward slightly freer buying by paper consumers, although it cannot be said that the era of large orders is as yet at hand. However, it may be said that the wholesale paper trade is on a much better basis than it was at any time since the slump set in and while recovery is coming on slowly there are indications that the small lot buyer is retiring from the picture and is being replaced by the consumer with bigger ideas and larger orders. The paper dealers have to wait on better conditions in the printing industry and other paper consuming sources and there are indications that these conditions are improving. The trade generally is receiving more enquiries than experienced for some months and with stocks of paper low on all sides and with a lot of paper consuming jobs about ready to be given out there seems good reason to believe that the paper industry is on the eve of much better times. Sentiment in the Canadian pulp and paper industry, with the exception of the news print branch, has undoubtedly improved. Men in the paper business have come to realize that there is small common-sense justification for hope of an all-round recovery in business generally, and in the paper business in particular, until the world problems confronting statesmanship in all lands have been put into shape for being solved. Accordingly, they are looking forward to the World Economic Conference and the benefits it is hoped will accrue to the paper industry therefrom.

Mill activity has increased slightly and the feeling in practically all branches is buoyant, but actual production has not increased to any great extent. Fine paper mills, for the most part, are able to dispose of their products on an operating basis of from four to five days per week and in some sections, such as paper board mills, are operating less than that, while the coarse paper market is badly infected by price-cutting. The same may be said of paper bags, with the possible exception of flour sacks, the demand for which keeps up well.

Has Newsprint Revival Started

An occasional indication has been seen of late of some recovery in the Canadian news print industry. It was reported at the beginning of June the giant news print plant of International Paper Company at Three Rivers, Que., had stepped up operations from 45 per cent of capacity to 75 per cent., with six machines now running on a 24-hour-day schedule. A definite up-turn was thought to have arrived when the production of news print in Canada for April showed an advance, marking a definite trend upward for the first time in three years. It is stated that May will show an increase over April, and it is understood that some publishers will require an increase of paper in June over May, contrary to the usual condition. The relentless price war and other competitive indications between the various news print companies has continued without solution.

It is now stated that the supply of news print on hand is the smallest in years, and the seasonal increase usually experienced in May is, from early figures, more pronounced this year. Some of the larger companies have within recent weeks started additional machines or have increased the days per week on the machines already operating. The business pick-up in the United States, as generally reported of late, is counted as an important factor in the restoration of the Canadian news print industry to increase advertising. The advantages of the industry in Canada through wood and water power supplies, are counted of permanent value.

Paper Bags for the North Country

Multi-wall paper bags, which have gained so much popularity as heavy-duty containers for flour, both in the bakery and household trades, have tackled an even harder assignment—that of carrying flour up into the woods for the logging camps. This has always presented a serious problem to those responsible for keeping the lumber-jacks supplied with food, owing to the difficulties of transportation and to the length of time which the flour has to be kept safe. Flour and other food supplies can only be taken into the woods while the snow is on the ground. There must be sufficient to last through the season's cutting operations—which means that usually there is quite a bit left over, to be used the following year. Here is where the qualifications of the multi-wall paper bag count heavily, for a fabric sack is unsuited for this sort of service. Dampness, insects or rodents would be sure to spoil the flour no matter what care is taken of the keep-over. Barrels are expensive, awkward to handle and even they cannot give the same degree of protection that is afforded by the four sturdy walls of Canadian kraft paper. The first logging camp shipments of flour in multi-wall paper bags were made last winter. The bags stood up perfectly under the hardships of the journey by rail from Midland, Ont., to Montreal, by steamer from Montreal to Godbout, P. Q., and finally by sledge from Godbout some forty to fifty miles through the woods to the camps operated by the St. Regis Paper Company of Canada, Ltd. Introduction of the multi-wall paper bag is creating new outlets for the kraft paper industry in Canada. This type of container, which has been used for several years for cement and other rock products, is regarded as having even greater advantages as a package for flour, sugar and other food stuffs, in which fields its sanitary features are particularly important. This is made possible by the recent development of Bates filling machines which permit the use of the valve bag method of packing.

Notes and Jottings of the Trade

A federal charter has been granted to the Maritime Lumber Company, Ltd., with a capital stock of $500,000, and head office in St. John, N. B., to manufacture, buy, sell and deal in forest products, including pulp, pulpwood, groundwood, etc. Among the incorporators are Gregory B. Oland and George Oland, manufacturers, of St. John.

W. Basil George, pulpwood dealer, Eagensville, Ont., died recently at Pembroke, Ont. Deceased was widely known throughout pulpwood circles in Ontario.

The rate of remuneration in the Ontario Government-operated board camps in Northern Ontario has been cut from $10 to $5 per month. Of some 8,000 men at present accommodated in these camps, 1,000 or more have left. The camps will continue to operate through the summer months the Hon. William Finlayson, Minister of Lands and For-

ests, stated. They will be located, as was the case last year, chiefly in the Mataway Valley, and between Fort William and Kenora. There was every hope, said Mr. Finlayson, that the North Bay-Ottawa stretch of road on which many camps have been located, would be completed this year.

J. W. Fitzgerald, of the St. Maurice Valley Paper Company, Montreal, was a recent business visitor in Toronto.

Arthur Dawe, general manager of the Consolidated Paper Company, was a caller at the office of their representatives in Toronto, Paper Sales, Ltd.

John M. Finlay, of the office staff in Toronto of Alliance Paper Mills, was in Georgetown, Ont., a few days ago, attending the funeral of his mother.

E. W. Buss, superintendent of the Montrose Division of Provincial Paper, Ltd., has returned home after an operation in the John Hopkins Hospital, and is on the road to recovery.

George Kidd, director of the British Columbia Pulp and Paper Company, and president of the British Columbia Power Corporation, was recently installed as vice-president of the Vancouver Board of Trade.

Paper Mill Officials Aid Chest Fund

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, June 4, 1933.—Alexander Thomson, president of the Champion Coated Paper Company, Hamilton, was general chairman of the Community Chest Committee that had charge of the campaign for a fund of $99,652, which came to a conclusion last Saturday with a total subscription of $80,848.25.

The fund will remain open and it is certain that substantial additions to it will be made this week. In view of the conditions generally prevailing during the past year or more the achievement in Hamilton was considered remarkable.

It is understood that the Champion Coated Paper Company is donating $1,000 a month to the fund. Other paper and allied firms, such as paper mill machinery concerns, have also contributed liberally. Many of the heads and other officials of these companies have subscribed individually, in addition to the amounts placed on the schedule by the various companies.

Dayton is already preparing for its campaign for the Community Chest. It is a noticeable fact that those actually in charge of the work are associated with the paper manufacturing and publishing business, a West Carrollton parchment maker being the chairman and the general manager of a Dayton publishing company that prints many magazines, being in general charge.

Cincinnati recently completed its Chest campaign. Alexander Thomson and other members of the Thomson family associated with the coated paper industry, who reside in Cincinnati suburbs, also contributed to that city's fund. Mr. Thomson's subscription to that fund was approximately $10,000.

Simplified Cover Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 6, 1933.—The simplified practice recommendation of the basic sheet sizes of cover paper has been accorded the required degree of written approval by the industry, and is effective June 15 according to the Division of Simplified Practice, Bureau of Standards.

Ten sheet sizes were added to this revised simplification program, by the standing committee of the industry. Also, specific headings for the various sections of the recommendation have been included by the committee.

Canadian Paper Exports Slower

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 5, 1933.—Government figures now available for exports in April make depressive reading. They show that newsprint exported during the month had a value of only $4,535,747, as compared with $5,403,954 in March, and $6,710,062 in April last year. In tonnage the showing was not so bad, for it was only 256 tons behind that of April a year ago; the most devastative effect comes from cut-throat competition in prices.

For the twelve months ended with April, newsprint exports from the Dominion were valued at $71,962,548, as compared with $101,383,692 in the twelve-month period ended with April, 1932. For the first four months of this year newsprint shipments from this country had a value of $19,405,179, against $30,408,830 in the same period of 1932.

Exports of pulp from Canada during April were valued at $1,282,039, which contrasts with $1,812,637 in the preceding month and with $1,258,332 in April of last year.

Following are the exports for the month of April compared with those of the preceding month and the corresponding month of last year:

	April, 1933	March, 1933	April, 1932
Paper—			
News print	$4,535,747	$5,403,954	$6,710,062
Others	162,479	236,142	227,902
Total	$4,698,226	$5,640,096	$6,937,964
Pulp—			
Sulphate	$176,194	$245,513	$127,883
Sulphite (bl.)	778,374	1,235,314	815,463
Sulphite (unbl.)	200,148	231,300	181,787
Mechanical	118,305	90,097	111,328
Screenings	3,331	2,631	14,106
N. O. P.	5,687	7,782	7,765
Total	$1,282,039	$1,812,637	$1,258,332
Total P. & P.	$5,980,265	$7,452,733	$8,196,296

Last month's exports were distributed as follows:

	Paper	Pulp	Total
U. S. A.	$4,182,728	$976,411	$5,159,139
U. Kingdom	131,349	61,291	192,640
Others	384,149	244,337	628,486
Total	$4,698,226	$1,282,039	$5,980,265

Of news print the United States during April took exports to the value of $4,156,291. Australia was the next largest buyer with $237,982. Other purchasers included the United Kingdom with $32,056, Mexico with $28,403, Colombia with $25,433, Peru with $12,835, British South Africa with $11,323, Cuba with $10,316, and the Irish Free State with $8,904.

George Teren Joins Nekoosa-Edwards

The Nekoosa-Edwards Paper Company, Port Edwards, Wis., announces the appointment of George Teren as an executive in the manufacturing department.

Mr. Teren assumed his duties April 1 and will devote most of his time to the development of the new fine papers soon to be featured by this old and well established paper manufacturing concern.

Following graduation from the Royal Institute of Technology in Orebro, Sweden, Mr. Teren came to the United States in 1913 to join the Chemical Paper Company, of Holyoke, Mass. Some time later he became superintendent of this mill and in 1919 he joined the American Writing Paper Company, Shattuck & Babcock Division.

Mr. Teren was later transferred from this division to Holyoke, Mass., as assistant to the general superintendent and manager of certain New England divisions.

During the past ten years, Mr. Teren's exceptional ability became recognized in the industry, resulting in the acceptance of his present executive position in the manufacturing department of the Nekoosa-Edwards Paper Company.

Outlook for News Print Uncertain In Canada

Financial Statement of Consolidated Paper Corp. Reveals Alarming Extent to Which Revenue Has Been Affected by Price Competition—Rumored Segregation of St. Lawrence Corp. Group Indicates Widening of Competition for Orders

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 5, 1933—While the outlook in most industries in Canada has perceptibly brightened during the past week, prospects in the news print industry have taken on an added gloom. Two factors have contributed to this—first the publication of the financial statement of the Consolidated Paper Corporation, revealing the alarming extent to which revenue has been affected by cut-throat price competition, and secondly the publication of a rumor that competition is to be widened by the segregation of the St. Lawrence Corporation group of companies, comprising St. Lawrence Paper, Brompton Pulp and Paper, and Lake St. John Pulp and Paper.

Consolidated Power Statement

Consolidated Power's statement showed that gross revenue for the past fifteen months had been affected to the extent of approximately $2,000,000 by the drop in the price of news print from the 1931 level, and that as a consequence there was a loss for the period of $98,087 before depreciation.

As regards the segregation of the St. Lawrence Corporation group of companies, which the Financial Times reports "is understood to be pending," it may be pointed out that St. Lawrence Corporation was formed in 1928 as a holding company to acquire the companies above mentioned. Commenting on the rumor, the *Financial Times* says:

Segregation Will Serve To Widen Field

The segregation will serve to widen the field of competition—already on a ruinous scale—in the news print industry and result in another mill being operated for the benefit of bondholders, Lake St. John Power and Paper, making an independent bid for news print tonange.

"Unhealthy competition in the news print field has already brought the price of that commodity down to a level $40 a ton f.o.b. New York— where few, if any, mills can cover operating expenses and make adequate provision for depreciation or depletion. Receivership or default in bond interest for leading operators such as Abitibi, Price Brothers, Minnesota and Ontario, Lake St. John, Donnacona and the former Canada Power and Paper have already resulted, while Consolidated Paper and International Paper, in their annual reports, recently published, showed the serious effects on operating results of unprofitable prices and limited production."

What Is It All Leading To?

Few news print executives care to discuss the situation for publication these days, but something of the inside feeling that prevails was revealed this week by L. J. Belnap, president of Consolidated Paper Corporation. In discussion with a group of newspapermen, he expressed the opinion that little prospect existed of the problems facing the news print industry being worked out among the operators themselves. The constructive efforts of the Beatty banking committee, supported by a few of the leading companies, he pointed out, have been consistently nullified by the policy of other operators, particularly those working under a receivership or being operated for the benefit of bond holders, of making all sorts of price concessions in order to obtain tonnage.

Some hope existed, Mr. Belnap pointed out, in the probable effects of the industrial stabilization legislation, sponsored by President Roosevelt, now before the U. S. Senate. If, he stated, the price of news print were raised along with the market for other commodities, it is likely that steps would be taken to ensure, in some manner, that news print from Canadian mills would not come into the U. S. market at a price to undersell the American mills. How the selling price of Canadian operators could be regulated by the U. S. government, Mr. Belnap could not forecast, but suggested it would have to be done through the importer in the U. S.

The advisability of a price being fixed in Canada which would coincide with that fixed under the industrial stabilization law was urged by Mr. Belnap, on the premise that regulatory action taken by the U. S. government on news print imports from Canada might interfere with the natural flow of trade in the industry.

Canada Subsidizing Foreign Wood Pulp

Various newspapers in Canada are supporting President Roosevelt's proposal to charge tolls on navigable waterways in order to make public canals pay their operating expenses. They apply the idea specifically to the St. Lawrence waterway. In this connection it has been revealed that in 1932 the St. Lawrence canals carried free of charge 56 cargoes of wood pulp consigned from Germany, Finland, Sweden and Norway to the United States, which is construed to mean "simply that the Canadian government bonused the importation into the United States of 90,000 tons of foreign wood pulp to compete with the Canadian product."

Canada and the Australian Market

No pulp is produced in Australia, and therefore the entire requirements of the market must be originally imported in some form, although there is an important paper manufacturing industry established in Australia, writes M. T. Stewart, Assistant Trade Commissioner for Canada, in Melbourne. Paper of all kinds, pulp, stationery and manufactures thereof were imported in 1930-31 amounting to £4,784,561 as compared with £4,052,636 for 1931-32. News print and printing paper, the leading item, was imported to the extent of £1,651,410 in 1930-31 as compared with importations of £1,661,603 for 1931-32. Australian imports of Canadian news print and printing papers showed a decrease of £455,628 in 1930-31, the imports being £438,807; they amounted to £443,432 in 1931-32. Canada maintained approximately her percentage share of the total business as compared with 1929-30. The statistics dealing with wrapping papers, including kraft, do not specify imports from Canada for 1931-32, indicating that the imports were practically nil. It should be noted, however, that imports from Canada in 1929-30 were valued at £27,087; these fell in 1930-31 to £892. Kraft paper is now made in Australia in quantities practically sufficient to meet the local requirements, the total importations for 1931-32 being only £2,841. The imports from Canada of paper, etc., in 1928-29 were valued at £1,044,696, and in 1929-30 at £980,879.

G-E Variable Voltage Winder Drive With Regenerative Braking of the Unwinding Reel Installed At the Bogalusa Paper Co., Bogalusa, La.

By D. R. Shoults,[1]

Considerable interest has been manifested within the last two years in the use of electrical braking systems on the unwinding stands of winders and rewinders of high speeds and capacities.

The maintenance of proper tension in the paper as it goes into the winder contributes materially to improving the characteristics of the rewound roll. In addition to the desirability of providing a proper and constant tension in the web, it is also desirable to recover as far as possible the power put into the unwinding stand by the web of paper and to eliminate any maintenance required in the braking equipment.

Winders used in high speed news print mills and in some kraft mills are now being operated at speeds from 2000 to 3500 r.p.m. and require power input to the winding motors varying between 50 and 100 hp. A considerable percentage of the power required for the winder is dissipated or, possibly, recovered by the braking system on the unwinding stand. The desirability of recovering this power and maintaining the correct value of tension increases as the speed and size of the equipment increase.

An Outstanding Installation

An outstanding installation of electrical regenerative braking has been recently made in connection with a General Electric variable voltage drive as applied to the Samuel M. Langston winder at the plant of the Bogalusa Paper Company, Bogalusa, La., as a part of their recent modernization program for their No. 1 machine.

This equipment embodies the usual features of the General Electric variable voltage winder drive wherein the direct current winder motor is separately excited from the excitation bus and is supplied with power by the generator of the motor-generator set drawing power from the AC supply line. The speed of the winder motor is controlled by varying the excitation and consequently the voltage of the main generator of the M-G set. The speed of the winder motor is essentially proportional to the voltage of the winder generator, which in turn depends upon the excitation applied to the generator field.

The line contactors between the generator and motor, and the generator field resistor are controlled by a substantial drum controller providing graduated control of the generator field. The segment arrangement of the drum controller is such that complete undervoltage protection is provided so that if the drive is stopped for any reason, the drum switch must be returned to the first point before the drive may again be started. The generator field resistor is so laid out that substantially equal increments of speed are obtained for each additional point of control.

Unusual Advantages

This drive offers the unusual advantages of easy, cushioned starting, complete control of operating speed with good speed regulation at any speed, and substantial operating economy in the power consumption at reduced speed.

The braking effect on the unwinding reel is obtained by connecting to it, through a suitable gear reduction, a generator whose armature output is fed back to the armature circuit of the winder motor. Inasmuch as the paper speed is essentially proportional to the winder motor armature voltage, the current returned by the braking generator is proportional to the tension which it maintains in the paper passing between the reel and the winder drums.

In order to maintain constant current output of the generator when the reel changes in diameter as the paper is unwound, it is necessary to vary the excitation of the generator. This is cared for by means of a current regulator whose operating coil is connected in the armature circuit of the generator. The regulator then applies the correct amount of excitation to this generator field to maintain current output at a constant desired value as determined by the tension requirements.

Provision is made conveniently to adjust the value of tension being held by the regulator, by manipulation of the calibrating rheostat mounted on the auxiliary panel near the drum controller. Winder motor and braking generator armature ammeters are also mounted upon this panel for convenience and guidance of the operators.

Tension with Winder at Standstill

An important feature of this winder equipment is that tension may be obtained in the paper with the winder at

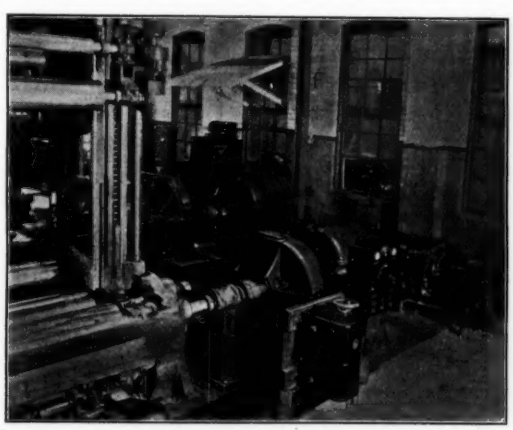

FIG. 1

View of drive side of Langston winder showing the G-E variable voltage winder drive providing regenerative braking of unwinding reel. The drum type control switch and the auxiliary control panel appear in the foreground.

[1] Industrial Engineering Dept., General Electric Co.

standstill and when operating at very slow speed in starting a new roll. As any direct current generator generates voltage only as a result of rotation, it is clearly impossible to generate a voltage at standstill to cause a circulation of current in the required direction through the braking generator circuit to produce a holdback torque. In fact, if this generator is connected across the armature of the winder motor when the equipment is being started, it will take current in the opposite direction and tend to act as a motor, thus feeding the sheet forward and throwing slack between the reel and the winder.

To care for this condition of operation an auxiliary booster generator is supplied as a part of the main motor-generator set. The armature of this booster generator is connected in series with the braking generator and has a voltage capacity only sufficient to compensate for the resistance losses in the armatures of the braking generator and the winder motor. Thus, the excitation of this booster generator actually causes the current to circulate between the braking generator and the winder motor and thus create tension in the paper. The braking generator excitation is consequently adjusted so that its generated voltage is at all times equal to the resistance drop in the armatures of the braking generator and winder motor.

Two Fields on Generator

There are two fields on this booster generator, one of which is a separately excited shunt winding which is connected in parallel with the braking generator shunt field. The other field is a series winding which is connected in the armature circuit of the winder motor and is so designed that it produces a voltage in the booster generator armature equal to and opposite in polarity to the voltage drop caused by the current in the winder motor armature.

The use of the booster generator eliminates the necessity for a winder attendant holding back on the winder roll to keep slack out of the paper as the winder is being started and also assists materially in obtaining a good firm centered roll.

In threading up the winder, the control is so arranged that the braking generator may be operated as a motor in either the forward or reverse direction, thus eliminating considerable manual effort on the part of the winder attendant in carrying the paper forward to the winder.

Auxiliary Dynamic Braking Circuit

An auxiliary dynamic braking circuit is provided for the braking generator so that if the main generator line contactor is tripped out due to any reason while the winder is operating, the braking effect will be maintained on the unwinding reel so that the paper is maintained taut and the entire equipment brought to a quick stop.

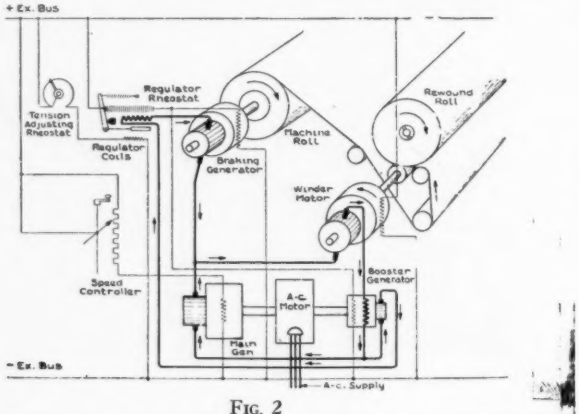

FIG. 2
Elementary connections of a G-E variable voltage winder drive providing regenerative braking tension control.

The unwinding reel may be unwound in either direction—that is, the printing side of the paper may be reversed in winding and the braking effect still maintained, by reversing the braking generator shunt field.

Power readings show that a heavy tension is maintained in the paper being unwound and that consequently a considerable power saving is realized. The attached table indicates that with paper speeds of 2000 f.p.m. when winding kraft liner approximately 108" wide, in some cases more than 50 per cent of the current taken by the winder motor is returned by the braking generator.

The tension held in the paper per inch of width may be calculated from the power readings of the braking generator. These calculations indicate tensions varying from 2 lbs. to almost 8 lbs. per inch of width. Flexibility in control of this tension is one of the greatest assets of this type of equipment.

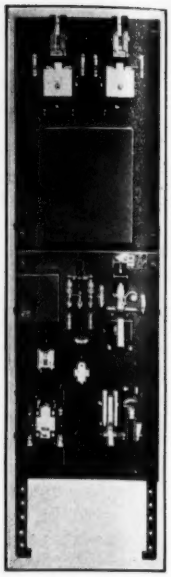

FIG. 3
Main control and regulator panel of G-E variable voltage winder drive providing regenerative braking tension control.

TABLE I

TYPICAL CURRENT READINGS
S. M. LANGSTON WINDER AT BOGALUSA PAPER COMPANY
114" WIDE—2000 F.P.M.—250 ARMATURE VOLTS MOTOR

	Armature Amperes		
	Motor	Braking Generator	Main Generator
90 lb. Kraft	285	155	130
16 Point 110 lb. Kraft Liner	260 305	112 150	148 155
16 Point 90 lb.* Kraft Liner	350 200	122 45	128 155

* Winder brake roll locked.

Winds Output of Two Machines

The operating efficiency of this winder and drive may be inferred from the fact that it has been winding the output from two of the paper machines in this plant.

There is undoubtedly a considerable future for the application of equipment of this nature in plants operating news print machines at high speed and those handling the heavier grades of book and kraft paper where the formation of good uniform rolls is of primary importance. The power savings resulting from this equipment are not to be overlooked.

Standards Committee Formed

The Executive Committee of the Technical Association of the Pulp and Paper Industry has established a new committee on standards which shall have for its objectives the following:

1. To provide regulations governing standards.
2. To review and edit existing and proposed standards.
3. To coordinate standardization activities within the association and with other organizations.

This committee is to report directly to the Executive Committee.

Roger C. Griffin, chief of tests, Arthur D. Little, Inc. and chairman of the TAPPI Testing Division, has been appointed chairman. The personnel of the committee will be announced later.

Steam Plant Rehabilitation and Paper Drying*

By F. C. Farnsworth[1]

There has never been a time when the manufacturers of paper should give more thought to the rehabilitation of the steam plant, in order to cut operating costs; a time when equipment could be purchased so cheaply; a time when the savings and earnings that could be effected would play such an important part in meeting competition; nor a time when this type of equipment could be financed more easily—the Government actually is greatly interested in loaning money through the R.F.C. to effect this kind of an improvement—one that is self-liquidating.

Operating losses can be definitely established and the financing of the improvement to correct these losses can be made through a period that will permit the improvement to be made out of the savings and earnings, as and when they accrue.

Losses Described

It is an established fact that great losses occur in the improper use of steam after it has left boilers and engines. These losses are described as follows:

Loss of production through stagnation of air and water in drying or heating elements; loss of quality and sales advantage because high pressures cause shrinkage, cockles, destroy finish, test and strength; loss of power because of high back pressures on the turbines or engines; or for the lack of proper temperature of the beater water, requiring the beaters to use more power; loss of fuel for the reason that plants carry high back pressures that are not properly sealed up against the escape of heat from open receiving tanks, open feed water heaters, etc., and improper pumping methods, etc.

We are in an age of development, research and science, and any mill that fails to keep abreast of the times with modern equipment, either to speed up production or to reduce operating costs, is sure to be lost in this day and age of keen competition.

The big utility plants have taken the lead in the development of the high pressure boilers and turbines, for generating steam and power cheaply, and no doubt the consulting engineers deserve a great deal of credit for their work in this development.

I, however, notice a distinct absence of activities of the consulting engineer in the industrial plant, attempting to solve the problem of the manufacturing costs with relation to the steam and power costs and the use of the process steam—a more definite explanation being that the proper use of steam and the proper drainage and extraction of air from the drying and heating elements in paper mill actually provides ways and means for increaisng production, improving the quality and lowering the general steam cost.

While the consulting engineer might be able to solve these problems more readily than the plant operating engineers, apparently he is loath to tackle these problems because the fees are usually based on the amount of equipment furnished (which is wrong) rather than the results accomplished.

Importance of Tying One Unit Into Another

The many intricacies involved in a complete distribution of the steam through the drying and heating elements and in the various processes from the time it leaves the engines or turbines until it has been delivered back into the boilers, requires years of training and experience and I find that too many industrial plants are given to accepting the advice of the various manufacurers of individual steam specialty units, without giving sufficient thought to the importance of tying one unit into another throughout the whole plant, in order to produce the maximum results.

In many instances the proper handling and distribution of the steam, and the sealing up of the condensate lines, and the heating of the water to higher temperatures has resulted in some instances in the saving of 25 per cent of the fuel used, and in many instances the improvements in the drying and heating has resulted in increased production of more than 25 per cent. In many instances the quality of the paper being dried has been greatly improved and cockles have been eliminated where drying was the cause of it. Shrinkage in the width of the sheet has been stopped. Proper equipment, correctly installed, will show savings and earnings that would pay its way out in less than a year.

Any industrial plant that does not carefully analyze its operating costs and reduce the costs through comparatively low capital expenditure is sure to feel this pinch in these drastic, highly competitive times.

Ofttimes the management of a plant, in selecting equipment, does not give proper consideration to the ultimate cost meaning by this that very often a dollar saved in the first cost means many dollars lost through the long period of operation.

An Illustration

For illustration: In a recent installation of a completely rehabilitated plant, the purchaser had the advantage of 20 tons increase in production per day and 12 per cent saving of the fuel.

Five years ago this purchaser was told that he could save $1,000 on the entire installation by installing a home-made system, and it has been definitely established that the plant has lost over $100,000 in five years through their failure to select the proper equipment and system.

Of course, the proper selection of equipment obviously is a task that a novice should not assume. The fees charged by consulting engineers are not exorbitant, and a re-check by a second consulting engineer would not be exorbitant as compared to operating losses such as I have outlined heretofore.

The advantage of a complete heat balance study provides a means of obtaining definite operating steam costs.

Thermodynamics of Drier Shell Heat Transfer

Steam that has been condensed to water as the result of having given up its latent heat of evaporation means that a pound of steam, for example at 15 pounds gauge pressure, has but 945 degrees latent heat of evaporation, while a pound of steam at only 5 pounds gauge pressure has 960 degrees of latent heat of evaporation or 15 degrees more at the lower pressure, than at the higher pressure, but the total heat has 8 degrees in favor of the higher pressure as the total heat includes the heat of the liquid, but the fact that the liquid is constantly removed means that the total latent heat volume is greatest from the steam at lower pressures. This does not mean that steam at the lower pressures will dry the most paper because the amount of heat given up to evaporate water depends entirely upon the temperature difference between the inside

* Presented at the meeting of the Miami Division of the American Pulp and Paper Mill Superintendents Association, Middletown, Ohio, April 29, 1933.

[1] President and general manager, Farnsworth Company, Watertown, N. Y.

and the outside of the drier. In comparing steam volume for drying capacity without regard for efficiencies in values between 5 pound and 15 pounds, shows that there is a difference of 22 degrees or 2½ per cent increased drying capacity in favor of steam at the higher pressure.

Water on the inside of the drier cools the drier shell as well as the water in the paper on the outside. For instance, wet paper going over the first driers at a temperature of say 50 degrees and the inside temperature of steam at gauge pressure of 5 pounds or 228 degrees or a difference between inside and outside of 178 degrees, while with steam at 15 pounds at 250 degrees, a difference of 200 degrees or 22 degrees greater difference with steam at 15 pounds than at 5 pounds. This difference does show in favor of the higher pressure so far as actual increased drying capacity is concerned. It is actually a fact that steam costs are more at the higher pressure, because of these higher pressures the actual number of b.t.u.'s per pound of steam is less than at 5 pounds pressure to the extent of 15 degrees, as shown heretofore.

Low Pressure Steam Less Costly

While it is shown herewith and is a known fact that steam at lower pressure is the least costly, yet there are other factors wherein the small saving of steam cost is overshadowed by equipment cost, space and many things too numerous to mention. That is, to dry a large quantity of paper with steam at low pressure might require many driers, a considerable space and much power, and although the low pressure might help improve quality and steam costs, the capital investment and power for operation cost might overbalance the lower pressure values.

To show how steam consumption varies from the wet end of the paper machine to the dry end, it was shown heretofore that there were 200 degrees difference between the inside and outside of a drier with paper at 50 degrees and steam at 15 pounds gauge pressure at 250 degrees.

Now assume that the paper going over the last drier was so nearly dried and at a temperature of 200 degrees and the steam on the inside of the drier 250 degrees, or only one quarter the temperature difference of that of the wet end drier which has 200 degrees difference or relatively using but one quarter of the steam in the last dry end drier that was used in the first wet end drier. Of course, due allowance must be made for the drier surface not in contact with the paper, that would be in relatively the same room temperature so that this part of the drier would utilize about the same amount of steam whether at the wet end or dry end.

Resistance to Heat Transfer

Water lying in the bottom of a drier, while it has heat value, it only contains about one-fifth the amount it would have as steam. What little heat value there is left in the liquid is quickly given up through the shell leaving cool water at the shell. The heat in the water not adjacent to the shell will not travel through the cool water on the shell surface. As an insulator, water is even better than asbestos.

Effect of Water in the Driers

Water in the driers adds additional total weight to the driers. An inch of water over the bottom of each drier will add tons to the weight of the driers, causing greater friction and more power consumption. It only requires 50 pounds of water in the bottom of a drier to double the horsepower required to drive the average drier.

When turning steam into a cold dryer not running, try holding a pyrometer against the top shell of the drier and one against the bottom where the water is, and see how long it takes to transfer heat from steam through a body of water but one inch deep. The pyrometer will indicate after a time the same on the bottom as on the top which means nothing insofar as volume heat transfer is concerned.

Temperature of Driers

It is highly important that the drier shell should not be too hot as the wet cold paper passes to the first wet end drier because a drier that is very hot will near or singe the outside fibers of the paper next to the shell of the drier and dry them thoroughly before the water on the inside has left the paper, which means that all the water passing through these once dried fibers will show discoloration and cause shrinkage of this sheet on many grades of paper.

It is absolutely essential that the drier at the wet end be at a low temperature and the temperatures gradually increased in approaching the dry end. This requirement seems most noticeable on pulp drying or kraft and book paper.

The one best way to accomplish these results is to have the temperature on the inside of the driers increase as the temperature of the paper increases in the travel toward the dry end. Only graduated steam pressures will effect graduated inside temperatures. This temperature graduation is made easy by blowing the steam through a section of dry end drier and then through a good separator, taking the water out and then blowing it through another section reducing the size of sections until it is brought down to one drier at the wet end.

This method reduces the pressures and temperatures automatically and also automatically brings all the air for extraction to the one wet end drier.

The pressure drop between sections can be regulated and thus provide uniform graduation of temperature and uniform temperature across the face of the dryers.

Rubprotex, a Protective Coating

Rubprotex is a rubber product in liquid form manufactured by Rubprotex Laboratories, 1059 East 79th Street, Chicago, designed as a protective coating to combat plant and equipment deterioration caused by moisture, acid and alkali fumes, can be applied the same as paint, by brush or spray.

This product differs radically from conventional types of protective paints. It adheres to all metallic surfaces, concrete, brick, wood, textiles, etc., without using any special primer. Applied to clean surfaces it is a protection against rust and corrosion, and can also be coated over rusty surfaces by simply brushing away the soft, loose particles of rust. It penetrates and admixes with the remaining rust forming a perfect film thus preventing further oxidization, and thereby eliminating the expensive operation of removing all rust as required by ordinary paints. It has all the essential elements of durability, withstands relatively high temperatures, will not harden, crack, or become brittle under any atmospheric conditions, and is not affected by sun, rain, snow, or ice.

How to combat corrosion has long been a problem in the paper and pulp manufacturing industries. Rubprotex has attracted favorable comment among plant executives and maintenance engineers who have had an opportunity to investigate its merits.

Rubprotex Laboratories are available to analyze problems, relating to corrosion, without cost or obligation.

John E. Costello of J. M. Huber Company, Inc., is handling the sales of Rubprotex in the paper field.

PAPER EXHIBIT OPENS AT CHICAGO'S WORLD FAIR

(Continued from page 13)

are improved for them, too. The price of kraft took another significant upward step during the week. Sulphite bond also moved up a bit higher. Book strengthened, Chicago eyes being turned to a New York meeting with the expectancy of even further improvement. The news print situation cleared slightly during the week, according to reports. Chicago representatives also report a more broad demand in ground woods. The paper board industry had a good May. The most significant thing, according to local prognosticators, is the broad base of the present improvement. Previously, the reported betterment had been spotty. That virtually all lines are now feeling the strength of an upward market is considered significant.

Kraft Paper Association Formed

Kraft manufacturers, representing by far the majority of the kraft tonnage produced in this country, met at the Drake Hotel, Chicago, on May 30, to form the Kraft Paper Association, an organization which will take the place of the Kraft Institute and which will cooperate with the Federal Administration in every possible way in subscribing to the trade association program set down in President Roosevelt's suggestions. The new association is drafting a Code of Ethics and hopes to include a solid representation from the industry in the belief that it were far better for kraft to clean its own house than to do nothing and let the Government step in.

Every Section Represented

Newly elected President Ellerson, executive of the Albemarle Paper Company, and the group, appointed an executive committee of eleven men, representing every geographic section of the country. Bag manufacturers that make kraft are also included in the list of the executive committee. John R. Diggs, Albemarle Paper Company, was elected secretary of the new association. Chicago reports indicate that the organization has already begun the drafting of by-laws, code of ethics and method of procedure which are confidently expected to completely wipe out the unfavorable and profitless characteristics of the industry. Already, in response to this commendable effort, the kraft market has materially strengthened and Chicago executives who are participating in the work of the new association confidently expect that this is only the beginning of a new era in the kraft industry.

News of the Trade

Unless the trade activities emanating from Washington are so pressing that they merit constant attention, the Middle West Division of the Salesmen's Association of the Paper Industry will hold its last meeting of the season on June 12. The regular Monday meetings have attracted large crowds and have been invaluable in keeping the association and its members in close touch with the rapid fire changes that have been taking place. If such activities continue unabated the association may go on with its regular program during the summer months. If not, social and business activities will be combined in the monthly golf outings, the second of which is scheduled for June 23 at the Sunset Ridge Country Club, Winnetka.

Harold Knott, western sales executive of the Eastern Manufacturing Company, has just returned from a fifteen day trip out on the Pacific Coast. Mr. Knott covered more than 6000 miles in the two weeks jaunt, visiting all of the important cities along the west coast. He reports that sentiment there is much improved and that actual business also shows marked signs of leaving the doldrums completely behind.

Chicago printers and advertising men who have little knowledge of the way in which paper is made are going to find the latest Oxford Paper broadside unusually interesting. Issued in Chicago through Bermingham & Prosser, the giant advertising piece illustrates and discusses press room operating requirements, tieing them up with the actual production of Oxford papers. Nine Oxford papers are given the benefit of the broadside which is printed on North Star Dull Coated-White.

Alundum Rubber Bonded Safety Treads

An entirely new type of safety tread that is especially suitable for use in industrial plants and factories, has just been placed on the market by Norton Company, of Worcester, Mass. It makes available in a replacement type of unit the features of permanent safety and exceptional durability which have made Alundum stair tile so popular with architects and engineers for new construction work.

Designated as the Alunlum Rubber Bonded Safety Tread the new Norton Floors product is composed of Alundum Aggregate securely bonded in a reinforced base of hard, tough rubber. The Aggregate is used to provide non-slip effectiveness rather than plain abrasive grain because the latter has a hard, smooth, glassy surface that does not provide sufficient bonding ability to withstand the severe service to which a floor material is subjected. Alundum Aggregate is produced by taking fine sizes of Alundum abrasive (aluminum oxide) and mixing it with special bonding clays. The mixture is pressed into blocks and is vitrified in kilns. The blocks are then crushed and screened to the desired sizes. The resulting aggregate consists of the minute grains of abrasive held together by the hard, glass-like vitreous bond. The aggregate is irregular, angular and slightly porous so that it bonds perfectly and securely with the rubber.

Alundum Rubber Bonded Safety Treads have a surface that is highly non-slip—even at the very nosing edge. This is an important feature for it is at the nosing that the foot pivots when one is descending a stairway. The tread's non-slip effectiveness is permanent—it will not wear smooth. It has a flat, level surface so that there is nothing to catch heels or to cause a tripping hazard.

This new Norton tread is not affected by weather conditions and its non-slip effectiveness is not lessened by water. Thus it is suitable for use in exposed locations out of doors as well as indoors where manufacturing processes cause wet floors.

The tread is supplied in units of various lengths and widths and can be placed directly over old wood, steel, concrete or stone steps. The installation work can easily be done by the shop carpenter or handy man.

The entire depth of the tread may be covered with the Alundum unit or it may be applied as a nosing for 6 inches or more on the outer edge of the tread. If the latter procedure is followed the area back of the Alundum safety tread may be covered with linoleum, rubber tiling, wood or any other suitable material. In industrial plants where appearance is not a factor, and where an extremely low cost job is desired, a triangular shaped strip of rubber may be applied on the step directly back of the tread to prevent heel catching and the remainder of the area may be left unfilled.

Obituary

Eugene H. Lansing

TROY, N. Y., May 31, 1933—Eugene Hungerford Lansing, prominent Waterford resident and designer of paper manufacturing machines, died this morning at Glens Falls after suffering a heart attack yesterday afternoon in a cemetery there. Mr. Lansing had attended funerals of two of his wife's relatives during the last week.

For Mrs. Lansing, widow of the well-known Waterford man, it was the third major tragedy to befall her within a week. Her father died first and several days later her nephew, William McLoughlin was murdered by bandits.

Mr. Lansing was born in Minnesota 63 years ago and came to Waterford 18 years ago, where he had lived ever since that time. He was an expert paper manufacturer and was employed as general superintendent of the A. P. W. Paper Company, in Albany until three years ago, when he retired to devote all his time to the designing of machines. He had received several patents on his paper making machines, which are manufactured by the Noble & Wood Machine Company of Hoosick Falls.

The survivors include his wife, who was formerly Miss Anna G. McLoughlin of Glens Falls; three daughters, Mrs. Edward Monahan and Miss Pauline Lansing of Glens Falls, and Mrs. Edward Sheeran of Troy, and a son Basil of Cohoes.

John H. Duffy

An associated Press dispatch from Los Angeles, Cal., to the *New York Tribune*, states that John H. Duffy, retired New York paper manufacturer, died on June 3 at his home in Beverly Hills, Cal. Mr. Duffy, who was 84 years of age, retired in November, 1918, after 45 years of service with the Perkins-Goodwin Company, of New York.

A penniless young Irish immigrant, John H. Duffy joined the Perkins-Goodwin Company as a mill hand and later served in various capacities until January 1, 1906, when he was appointed vice-president. Following the death of Major Ackerman in May, 1908, Mr. Duffy was elected president and chairman of the board of directors of the Perkins-Goodwin Company and the Tidewater Paper Mills, of Brooklyn, N. Y. Under his leadership, the company rapidly developed into million-dollar corporation, which for quite some time supplied news print to a great many of the leading daily newspapers throughout the country.

Mr. Duffy was a member of the St. Andrews Golf Club and the Larchmont Yacht Club. Surviving are a daughter, Mrs. Charles G. Witherspoon, and two sons, Sydney G. Duffy and John H. Duffy, Jr.

Lee Paper Co. Incorporates

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., June 4, 1933—Articles of incorporation extending the corporate term of the Lee Paper Company of Vicksburg, Mich., 30 years from July 13, 1933, were received Saturday at the Kalamazoo County Clerk's offices from Secretary of State Frank D. Fitzgerald, at Lansing, as filed by the directors Norman Bardeen and Byron Bishop of Vicksburg; Fred E. Lee and A. B. Gardner, of Dowagiac; John A. and Harry C. Howard, and George D. Cobb, of Kalamazoo; and Florence B. Anderson, Otsego. The company has 37,500 shares of common stock par value $10, with paid capital of $372,760.

Boston Paper Trade Happenings

BOSTON, Mass., June 5, 1933—The Arnold-Roberts Company is offering an exceedingly attractive sample book of Skytone Cover and Book, which it is distributing. These papers, made by the A. M. Collins Manufacturing Company, constitute a very recent new line. Skytone is a development in tone-coated paper that immediately suggests wide usage for distinctive types of covers, booklets, folders and announcements. The paper is made in white, buff and green.

The Royal Card and Paper Company, of New York, of which Henry L. Goodman is a representative, is sending out a new line, Parchtex, in white, natural and regular plate finish. This paper is a decidedly good substitute for parchment paper, used for greeting card work.

C. W. Hoeper, sales manager for the Badger Paper Mills, Inc., Peshtigo, Wis., manufacturers of sulphite bonds and M. G. papers, was in town last week, interviewing the trade with A. M. Burr, sales agents for the mills in the New England territory.

The Tileston estate has leased space on the third floor at 596 Atlantic avenue to the Century Paper Company for a term of years.

Anna F. Warde, for twenty years purchasing agent for the Touraine Company, candy manufacturers, has resigned her position to become connected with the sales department of Stimpson & Co., general paper merchants, as of June 5, and will call on the confectionery and ice cream trade.

Glazed and Fancy Paper Men Meet

The Glazed and Fancy Paper Association held its regular quarterly meeting Friday, May 19, at the University Club, Boston, Mass. The executive committee met on the evening of Thursday, May 18, and made plans for action in anticipation of the passage of the National Industrial Recovery Bill.

The association luncheon and meeting was attended by thirty-five people which is the largest attendance on record.

Frank H. Willard, president of the Associated Industries of Massachusetts, president of Graton & Knight Manufacturing Company of Worcester, and a Director of the National Manufacturers Association, spoke regarding this national legislation providing for control of industry. Mr. Willard read the bill, gave some of its background and explained how it was expected to function. Mr. Willard's presentation was very thorough and clear, thus making it of great value to all those who attended.

The necessary plans for actions by this Association under this Bill are being taken care of by the Executive Committee.

New Coating Product Introduced

The Chemical Products Company, of Wichita, Kansas, has recently introduced a new coating product called "Resistal B" which resists the action of alkali up to 20 per cent concentration, is unattacked by sulphuric acid of accumulator strength, and is stable under nearly all conditions. It is relatively non-inflammable and is practically impermeable to water, having a hygroscopicity factor of 0.05. It is very flexible and presents a tough film in 1½ hours drying time. It has a tensile film strength of 5,000 to 7,000 pounds per square inch, an exceedingly high dielectric resistance. This coating will not decompose at 180 degrees C. Immersed for three months in thirty parts by volume (36 per cent) sulphuric acid, it is unaffected, and remains unattacked upon indefinite immersion in caustic soda solution.

New York Trade Jottings

Noxall Paper and Twine Company, Inc., Manhattan, has been chartered under the laws of the State of New York, with a capital stock of $20,000. Samuel J. Kern, of 50 Court street, Brooklyn, N. Y., was the attorney.

* * *

The Folding Box Manufacturers Association of New York recently purchased at United States Court Sale the property, plant and equipment of I. & C. Young, Inc. The plant and equipment has been distributed amongst the members of the association.

* * *

The regular weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the paper industry was held on Monday last at the Hotel Roosevelt, New York. Various matters of importance to the members were discussed, including the forthcoming summer golf outing.

* * *

Reading Paper Mills, of Reading, Pa., announce that they have appointed Herman Scott Chalfant, Inc., of 342 Madison Avenue, New York City, as sales agents for their product for the jobbing and converting trade. Their well known mill brands will be handled independently, as heretofore, by their established distributors throughout the country. Inasmuch as these two outlets for Reading papers do not conflict, they feel confident that the new arrangement will result in wider distribution.

* * *

Formation of a metropolitan advisory council of the set-up paperbox industry, consisting of three representatives from each of the five associations in the local field, to assist the industry under the Recovery Act, has been announced by Sol A. Herzog, associate counsel and administrator of the industry. The industry is particularly anxious to raise wages and to curtail sharply the weekly hours of work. A meeting will be held on the evening of June 8 to formulate a code. The associations represented include the Packaging Credit Bureau, the Carton Club of Greater New York, the Handkerchief Paper Box Manufacturers Club, the New Jersey Box Craft Credit Bureau and the Paper Box Credit Bureau.

Algonquin Co. Expects More Orders

[FROM OUR REGULAR CORRESPONDENT]

OGDENSBURG, N. Y., June 4, 1933—Officials of the Algonquin Paper Company returned this week from an extensive business trip to the Metropolis where it is understood that negotiations relative to new orders were carried on. F. A. Augsbury, head of the company, was accompanied by W. E. Westbrook, general manager. It is said that the negotiations are being conducted with large publishing interests with a view towards guaranteeing steady operations at the mill for the remainder of the current year.

Bids for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 7, 1933—The Government Printing Office has received the following bids for 2,000 pounds of plate wiping paper: R. P. Andrews Paper Company, at 7 cents per pound; Barton, Duer & Koch Paper Company, 5.6 cents; Walker Goulard Plehn Company, Inc., 6.1 cents less 1 per cent; Mathers-Lamm Paper Company, 6.65 cents; Whitaker Paper Company, 3.73 cents and 4.69 cents; Reese & Reese, Inc., 5.88 cents; and Herman Scott Chalfant, Inc., 5.75 cents less 2 per cent.

Goes With Jewel Paper Corp.

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., June 4, 1933—It was announced here this week that Claude D. Peck has severed his connections with the Carthage Supply Company in order to join the sales force of the Jewel Paper Corporation at Watertown. He has been connected with the local firm for the past several years and prior to that time was identified with the paper mill trade. He has already taken over his new duties.

The Jewel Paper Corporation has just been reorganized and officials said that an expansion of the business is contemplated. A number of new lines are being added and the business from now on is expected to continue to show steady growth. C. T. Jewel, president, is well known in paper mill circles as he was prominently connected with the St. Regis Paper Company for many years prior to embarking in business for himself a short time ago. Officers of the company include Mr. Jewel as president and Mrs. F. K. Jewel as vice president. H. M. Sharpe is secretary and treasurer.

Penn Card & Paper Building Damaged

PHILADELPHIA, Pa., May 29, 1933—The tornado that struck Philadelphia last Wednesday caused great havoc to the building of the Penn Card and Paper Company, Inc., at 410 to 416 Race street. Two large plate glass windows were smashed to pieces, causing all the employees to leave the place. Fortunately, no one was injured.

When the windows were smashed, with the wind blowing 100 miles an hour, everything in sight blew up in the air, including many valuable papers. The whole thing only lasted about fifteen minutes, but after it was done, the place looked like a riot. In addition to that, part of the roof blew away, and considerable damage was done to the stock.

Their building having a considerably large frontage, and being right in the front of the entrance of the Delaware River Bridge, is exposed to any wind that comes along. However, they immediately started to repair the damage the following morning, and hope it will withstand any tornado now, that they trust will not come.

Pacific Mills Elect Officers

SEATTLE, Wash., May 26, 1933.—Stockholders of the Pacific Coast Paper Mills, Bellingham, Wash., re-elected each of its directors for ensuing year at their annual meeting held recently. The board in turn re-elected its officers to serve during 1933. The board includes J. J. Herb, P. J. Herb, George H. Bacon and William McCush of Bellingham; E. M. Herb and H. M. Lord of New Westminster, B. C., and John D. Watson, Appleton, Wis.

J. J. Herb is president, P. J. Herb, vice-president and William McCush, treasurer and Victor A. Hughes, secretary.

Empire Power Paper Mill Sold

ROCK CITY FALLS, N. Y., May 29, 1933.—Announcement is made of the purchase of the former property of the Empire Paper and Board Company by Edward E. Sheldon, prominent business man of Albany. For some time past the mill has been used principally for experimental work by the United States Rubber Company which acquired it several years ago. The mill property is situated so as to derive excellent power advantages. It is understood that the new owner will use the mill for research work.

Dean of Paper Salesmen's Record

Alonzo A. Thomas, dean of paper salesmen, completed his sixtieth year of continuous service in the paper industry on June 1. Writing to H. J. Grey, president of the Wilkinson-Grey Company, Mr. Thomas declared.

"It gives me the distinguished great pleasure to bring to your appreciated attention that on Thursday, June 1, I will have completed my sixtieth year of continuous service and to fully enjoy the exceptional honor as the sexagenarian Dean of Paper Salesmen with Wilkinson Bros. & Co., 1873-1930 and with Wilkinson-Grey Company, 1930-1933 of which I am exceedingly proud, and very highly value this great record.

"I sincerely trust that the All Wise Providence will grant me additional years to represent Wilkinson-Grey Company and to remain with all of my fellow associates and also to be with many of my valued commercial friends.

"I sincerely trust that Wilkinson-Grey Company will continue to fully enjoy their popularity and to garner from the commercial harvest the fruits of present and future financial success.

"Paper has played, and will continue to play an exceptionally important part as one of the world's greatest historic industries, and to constitute as the world's indispensable asset.

"Of making many books, there is no end. Books are keys to magic portals and invaluable manuscripts of great rarity that cannot be estimated.

"It was paper that has given us the priceless libraries of the world and have been handed down to us through the countless ages as gifted products of the giant master minds of the world as a vast intellectual ocean whose waves touch every shore of thought.

"Our morning newspaper editions give us the current events of the day, and we are in immediate touch with the four corners of the globe."

Mr. Thomas has received the following communication from H. J. Grey, president of the Wilkinson-Grey Company, congratulating him on his many years of diligent and loyal service:

"The very thought that a man can remain in the paper and twine business for sixty years, as you have and still obtain from it so much real pleasure and joy, gives me a great thrill.

"This entire week I have been thinking of you and of your accomplishment and of your many years of diligent, loyal, interested and enthusiastic service.

"I assure you that I was delighted to receive your very beautiful letter. This very important occasion, however, would not have gone by unnoticed or without due consideration and acknowledgment.

"There is not a single gentleman who is a finer representative of our company, in our whole organization, than yourself. There is not one who is more courteous, or more polite, or more enthusiastic, or more loyal. It is my very sincere wish that you will, for many years, continue to stay with us and contact your many good friends, who always enjoy your visits with them.

"I admire, in particular, your keenness and enthusiasm for the paper business. I admire also, your ability to keep right up to the minute in the new uses and development in the business and that in all these years, the paper business has not lost for you its fascination.

"Just like an experienced and operative master mason uses his working tools to erect a lasting monument, so similarly have you through sincere kindness, thoughtfulness and gentle consideration, constructed a Temple of Love, not built by mortal hands, Eternal in the Heavens. May that Architect of the Universe, in His Wisdom, spare you for many years that we may continue to have the privilege and pleasure of your company in our midst.

"My very best and sincere wishes to you, Mr. Thomas. May you enjoy many many more years of good health, happiness and contentment. The same expression is voiced by each and everyone of your many dear friends in this organization and it is, I know, the same, without exception, from all of your business friends."

Paper Credit Men To Meet

The Fine Paper Group Credit will meet at the Congress of Industry, Milwaukee, June 20, 1933.

The above credit groups will hold meetings at the Hotel Schroeder in connection with the convention of the National Association of Credit Men, which convention lasts from June 19, to June 22, inclusive.

Tuesday, June 20, will be devoted to the Fine Paper Group meetings. The morning session, 10:00 to 12:30, will be given to speakers from the various trade groups now operating credit plans and the afternoon, 2:30 to 5:00, to round-table discussions.

The meetings are certain to be interesting and instructive and particularly will they be of value to paper merchants in territories where there are no present credit plans operative.

Chairmen of the various local groups will outline in their talks:

I. Outline of their plan.
II. Effectiveness of their plan.
III. Outline of method of control; e.g., by administrator or otherwise.
IV. General information developed in their territory that may be of value to others.

The Chairman of the Fine Paper Group Convention meeting is K. E. Hellstrom, Messinger Paper Company, 732 West Van Buren street, Chicago; Vice-Chairman, George G. Custer, W. F. Nackie Paper Company, Milwaukee, Wis.

The Paper Products and Converters Group, Chairman, Russell C. Flom, Menasha Products Company, Menasha, Wis., will also have organization meetings on the same day.

All Paper Trade Group members are urged to attend these meetings and invitations are extended to all paper trade credit men and others who may be interested—even though not members of the National Association of Credit Men.

National Purchasing Agents to Meet

The eighteenth international Convention and Informashow of the national association of Purchasing Agents will be held June 12, 13, 14, and 15, 1933, at the Hotel Statler, Boston, Mass. The slogan for this year's Convention is "Build on Fundamentals"—very appropriate in view of the unsettled economic conditions.

The program will be devoted to such subjects as "The Problem of Cutting Inventory Costs," "Today's Buying Policies," "Can Buyers Stabilize Markets?" etc., to be presented in a very able manner by men well versed on the subject. The members will also attend many plant visitations.

The Informashow is an industrial exposition which, because of the type of its exhibits of convenient and practical arrangement, and the unusual opportunity it affords for sales contacts with live prospects, has won first place in the exhibit programs of many national advertisers.

Despite the comparatively unfavorable times, a membership of at least one thousand is expected to attend from all over the United States and Canada.

Finnish Paper Prices Low

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 31, 1933.—Markets for Finnish paper and pulp products have remained largely unchanged according to a report from American Consul Bouchal, at Helsingfors.

Prices have continued low. Uncertain conditions in world markets have delayed sales for 1934 shipments. There are indications, however, both in the United Kingdom and in other important markets that the demand for wrapping papers is improving. Chemical pulp sales have proceeded normally at fairly firm prices. Mechanical groundwood mills have placed their first half year's production and a large part of that for the remainder of this year.

Exports of paper during the first quarter of this year totalled 72,438 metric tons as against 63,372 tons during the corresponding period of last year.

Rubber Lined Valves

"This new and exclusive Goodrich development fills the need for a rubber lined valve of simple, rugged design and reasonable cost, suitable for handling corrosive and abrasive fluids under conditions of fairly high pressure, pulsating pressure, throttling or suction" declares a four page insert to its mechanical rubber goods catalog on its new Vulcalock valve, just issued by The B. F. Goodrich Rubber Company, Akron, Ohio. This catalog section is now available upon request to the manufacturer.

The Vulcalock valve may be lined with any of the standard Goodrich Acidseal compounds, hard or soft, depending upon conditions of service, and may be used with perfect confidence for vacuum or throttling work, the insert further declares.

The insert lists specifications for varied types of service for the new valve, describes its unique engineering features, gives directions for installation and use, tables of dimensions and a list and description of parts.

Western Containers Build Factory

[FROM OUR REGULAR CORRESPONDENT]

SEATTLE, Wash., May 26, 1933.—The Western Containers Inc., manufacturers of corrugated fibre board and corrugated containers, have erected a large office and factory building on East Marginal Way, Seattle, to replace their small former plant at 5035 E. Marginal Way here. Completion of the new unit will give the firm 50 per cent greater production capacity. The structure is "L" shaped, 245 feet long, 150 feet wide at the rear and 75 feet wide in front. It will have a combined floor area of not less than 27,000 feet.

Use of the manufactured product will serve the packaging of food products and drugs and beer for "home delivery." Officers of the firm are V. J. Stark, managing director and Earl B. Stark, secretary and sales manager.

News Print Rates to Chicago

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 7, 1933—The Interstate Commerce Commission has handed down a decision granting authority, on conditions to establish rates on news print paper, in carloads, from Carthage, Norwood and Norfolk, N. Y., to Chicago, without observing the long and short haul provision of section 4 of the Interstate Commerce Act. The decision was in connection with the application of news print paper rates to Chicago.

Industrial Control Bill Reported

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 7, 1933—The Finance Committee made its report to the Senate late Monday afternoon on the industrial control bill, in considerably changed form in which the bill passed the House.

The bill was taken up by the Senate for discussion today (Wednesday, June 7th) and it is not generally believed that it will be passed by that body this week. Following passage of the bill by the Upper House it will have to go to conference but it is generally believed here that the bill will be law by the end of next week, which is about the time Congress is expected to adjourn for the summer.

Section 7 of the bill sets forth certain conditions that must be contained in each code of fair competition or agreement. Among these is the condition that employees shall have the right of organization and collective bargaining through representatives of their own choosing and shall be free from interference, restraint, or coercion of employers of labor or their agents in designating representatives or in self organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection.

The Finance Committee has inserted a proviso in section 7 (a) indicating that it is not intended to compel a change in existing satisfactory relationships between employees and employers. A further condition has been imposed that no employee and no one seeking employment shall be required as a condition of employment to refrain from organizing or assisting a labor organization of his own choosing. The House bill is limited to refraining from "joining" a labor organization of his own choosing.

Build New Flume at Hawley Mill

[FROM OUR REGULAR CORRESPONDENT]

SEATTLE, Wash., May 26, 1933.—Construction of a flume on the property of the Hawley Pulp and Paper Company, Oregon City, Ore., is expected to prove a money-saver over the old method of operation. The flume, which was completed in March, will transport the wood to the ground mill, out in the stream. With the old system of loading in use, wood for the ground mill was first unloaded from train trucks and then loaded on a barge to be taken across the span of water of 500 feet to be again unloaded. The method was a "time-waster" and the new system was devised.

Engineers constructed a flume over the channel and the logs are now carried via the flume direct to the ground mill, eliminating the several loading and unloading practices.

Finland's Markets Disturbed

WASHINGTON, D. C., June 7, 1933—The pulp and paper markets of Finland were adversely affected by the financial difficulties in the United States, says a report from Commercial Attache Watson at Helsingfors.

Sales to the United States came to a standstill at the time of the banking moratorium and sellers in Finland were much disturbed as to the probable trend of exchange conditions.

Britain Increases Paper Production

WASHINGTON, D. C., June 7, 1933—The British paper trade reports increased production of kraft and other wrapping papers during the first quarter of the current year as compared with the last three months of last year while news print showed a slight decline according to a report from Trade Commissioner Kennedy at London.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Muskegon, Mich.—The Michigan United Paper Company, manufacturer of special waterproof papers for bag production and other service, is completing an expansion program for increased output. In addition to improvements at mill, about 3000 square feet of space has been acquired in former plant of Chase-Hackley Piano Company, to be used for expansion. Working force at the plant recently has been doubled.

New York, N. Y.—The Fibre Specialty Corporation, manufacturer of fibre products, has leased a floor in building at 42 East 20th street, and will occupy at once for new local plant.

Winchester, Va.—The Shenandoah Paper Board Company, Inc., has been organized with a capital of $100,000, by interests identified with the Shenandoah Boxboard Corporation, with local mill for manufacture of boxboard, test liners and allied products. The new company will specialize in the production of paperboard products of various kinds. It is headed by N. H. Carpenter, Jr., secretary and treasurer of the Shenandoah Boxboard Corporation.

Akron, Ohio—The Palmer Match Company, Chamber of Commerce Building, Pittsburgh, Pa., is arranging for early construction of a new addition to plant on Corey avenue, Akron, for the manufacture of book matches. It will be two-story, 75 x 138 feet, estimated to cost over $50,000, with equipment. Machinery will be installed for cardboard conversion for match books. Hannah & Sterling, Grant Building, Pittsburgh, are architects, in charge. T. A. Palmer, Akron, is vice-president.

Kalamazoo, Mich.—The Kalamazoo Vegetable Parchment Company, Parchment, near Kalamazoo, has closed bids on general contract for new additions to mill, recently referred to in these columns. Two one-story extensions will be built. No estimate of cost has been announced. The units will be used for expansion. Billingham & Cobb, Kalamazoo, are architects, in charge.

Rochester, N. Y.—The Unitpak Corporation, recently organized with capital of $50,000 and 5000 shares of common stock, no par value, plans operation of local plant for the manufacture of paper boxes and containers. New company is headed by Frederick M. Tobin, 9 Lake View Park, Rochester, and J. Frank Traynor, 35 Cromwell drive, Brighton, N. Y.

Bristol, Pa.—The Paterson Parchment Paper Company is running on improved production schedule at its mill at Edgely, near Bristol, giving employment to sizable working force.

Menasha, Wis.—The Menasha Mill Supply Company is perfecting final plans for the rebuilding of two-story storage and distributing plant on Appleton street, recently damaged by fire, and will proceed with work at early date. The fire caused a damage reported at $30,000. The structure is owned by the Aetna Waste Paper Company, 2355 South La Salle street, Chicago. The reconstruction program is said to cost over $25,000.

New York, N. Y.—The O. K. Paper Box Company recently organized, has leased two floors in building at 145 West Eighteenth street, and will occupy at once for new plant for the manufacture of paper boxes and containers of various kinds.

Chicago, Ill.—The Container Corporation of America, 111 West Washington street, manufacturer of paper and paperboard boxes, containers, etc., has advanced production at its different plants, with enlarged working forces. Business is running over 60 per cent in excess of this same time last year.

Wheeling, W. Va.—The corrugated carton and container business of the H. Bettis Company, Wheeling, has been purchased by the McKee Glass Company, Jeannette, Pa., which has secured its requirements from the Bettis company for many years. The new owner will continue the operation of the plant and plans a general expansion program in the future.

Covington, Va.—The Industrial Rayon Corporation, West 98th street, Cleveland, Ohio, manufacturer of cellulose rayon products, is completing superstructures for new additions at branch mill at Covington, recently referred to in these colums, and will begin the installation of new equipment at once. Large increase in capacity will be carried out. The expansion includes a three-story unit, 44x58 feet, and two smaller one-story structures. When equipment is ready, the plant will have a rated output of about 10,000,000 pounds per annum. Christian, Schwarzenberg & Gaede Company, 1836 Euclid avenue, Cleveland, are architects. The company is maintaining a full 24-hour production schedule at the Covington mills, as well as at main plant at Cleveland. Hiram S. Rivitz is president.

Asheville, N. C.—The American Enka Corporation, Enka, near Asheville, is running on a full capacity, 24-hour day basis, at its local cellulose rayon mills, and present production is the highest in the history of the plant. About 2000 workers are employed in different departments, the largest number ever engaged at the mills.

Lafayette, Ind.—The Lafayette Box Board and Paper Company, manufacturers of paper and boxboard specialties, will make improvements in plant and equipment. The mill has been closed for about 18 months. It is proposed to have all departments ready for service some time in July, when it is expected to give employment to a full working quota of about 300 persons.

New Companies

Albany, N. Y.—The J. & L. Paper Products Company has been incorporated with a capital of $20,000, to

manufacture and deal in paper goods, of various kinds. The new company is headed by Harry M. Jaffee and Leo Lapidus, both of 494 Delaware avenue, Albany.

Blue Island, Ill.—The W. W. Koehler Paper Company, 2223 Grove street, has been organized with a capital of $40,000, to manufacture and deal in paper products. The principal incorporators are Walter Koehler and Norman W. Schwartz, address noted.

Clarendon, Va.—The Columbia Wall Paper Company, Inc., has been incorporated with a capital of $10,000 to deal in wall papers and kindred stocks. John T. Graves, 2128 Thirty-seventh street, N.W., Washington, D. C., is principal incorporator and representative.

Los Angeles, Cal.—The Airex Products and Paper Company, Reno., Nev., a Nevada corporation, has filed notice of organization to operate in California, for the manufacture and distribution of paper products. The company is headed by E. F. and I. H. Fetty, both of Portland, Ore. It is represented by Ovila N. Normandin, 1101 Garland Building, Los Angeles.

New York, N. Y.—The Noxoll Paper and Twine Company, Inc., has been incorporated with a capital of $20,000, to deal in wrapping papers and kindred products. New company is represented by Samuel J. Kern, 50 Court street, Brooklyn, an attorney.

Lynn, Mass.—The Klayman Wall Paper Company, Inc., has been incorporated with capital of $10,000, to deal in wall papers and kindred stocks. Jacob Clayman, 16 Lagrange terrace, Lynn, is treasurer and representative.

Paper Mills Feel Business Gains

The paper industry is showing the effect of the business upturn manifest of late in the textile, motors, home appliance and other fields according to the Union of Springfield, Mass. There is a marked increase of orders by paper mills of Western Massachusetts, according to Emmett H. Naylor, secretary of the Writing Paper Manufacturers' association. Advertising campaigns by automobile, textile and house-furnishing establishments, etc., some of which have been held in abeyance for many weeks, are being launched, with the result of creating an immediate demand for paper of various grades and finishes. Less economy is being practiced in the selection of papers, with a resultant trend toward somewhat better quality for booklets and circulars, though some mills report that their gains are more in larger sales of the cheaper grades.

Inquiry at the Strathmore Paper company brought the statement that orders have improved and that employees are working more hours per week, so that the mills are operating at approximately 50 per cent normal. Reports from the American Writing Paper company and the Chemical Paper Manufacturing company in Holyoke tell of gains in business and improved manufacturing operations. Old Colony Envelope company in Westfield gives a similar report.

Stevens & Thompson Advance Wages

[FROM OUR REGULAR CORRESPONDENT]

MIDDLE FALLS, N. Y., June 4, 1933.—The Stevens & Thompson Paper Company has announced the granting of a five per cent wage increase as the result of improved business conditions. The increase becomes effective immediately and several hundred employees are affected. Branch plants at North Hoosick and Greenwich are also affected by the wage increase. For the past few weeks mills of the company have been observing a 24 hour daily schedule with an extra shift of workers.

Boston Paper Market Buoyant

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 5, 1933—With the general improvement in various industries continuing, the demand for paper in all lines was fully sustained, so that Boston paper jobbers and manufacturers' representatives remained buoyant as a whole during the last week. Bonds, ledgers, weddings, writings, papers for advertising purposes—all moved well. For at least one New England concern manufacturing sulphite printing paper, May was the best month since November, 1930. Price advances were made on unwatermarked white sulphite bond, which is now quoted at $4.50 per hundredweight, f.o.b. mill for 1 ton or more; $4.25 per hundred weight f.o.b. mill from 1 bundle to 1 ton. Freight is allowed on 18 tons or more; the usual differential colors, $1.00 per hundred weight, goldenrod $2.00 per hundred weight additional apply. Increased business in manufacturing cities, as Lowell and Lawrence brought a greater volume of sales of writing papers.

Greater activity developed in wrapping paper, so that values were firmly maintained. Another rise took place in No. 2 kraft, which reached 3 cents a roll for 3¼ sheets. Some feel that there will be even higher prices for kraft and that there will be a shortage in the supply. Specialties moved actively, with prices strong.

Box board business continued fairly good. Due to the increase in the price of paper stock, values of board have risen again, $2.50 or more. Filled news board advanced to $35.00, compared with $32.50; chip board to $32.50, against $30.00; chip board for creasing to $35; single manila lined chip to $42.50 @ $50.00, against $40.00; single white, coated bender to $52.50 @ $60.00, against $50.00 @ $57.50.

In a sellers' market, paper stock was very active. Mixed papers, folded news, corrugated box waste and screening wrappers all scored heavy advances. The No. 1, 2 and 3 grades of roofing rags were very much sought after and their prices increased materially. There was some demand for cotton sweeps. The advance in waste paper does not affect all grades, as books and ledgers. Prices on new rags advanced among dealers, but mills did not take many at the new quotations. A recent meeting was held in Holyoke at which dealers were asked not to speculate in new rags.

Prices of twine are up and some buyers are paying them. New prices of polished twine were issued covering Cayuga twine, made by the Cayuga Linen & Cotton Mills, Inc., Auburn, N. Y.

Chromium-Plated Suction Box Covers

U. S. Patent No. 1,910,330 for chromium-plated suction box covers for paper-making machines has been issued to Edson R. Granger, assignor to Chromium Corporation of America. Chromium-plated suction box covers in operation in many mills are said to provide certain improvements not previously obtainable. Wire life has been increased materially: in some cases as much as 50 per cent. Felt life is lengthened about one-third. The characteristic smoothness of chromium reduces friction and requires less driving power, largely eliminates clogging and consequent loss of suction efficiency. Plated covers have operated 18 months with no cleaning whatsoever. The unusually hard surface remains smooth and unscored for indefinite periods, and corrosion is eliminated. Higher operating speeds are made possible. Suction may be reduced 40 per cent or more without decreasing the amount of water removed. A reversible feature permits both chromium plated sides to be used. These advantages are claimed to result in an improved product at decreased cost.

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TRADE ASSOCIATIONS UNDER NATIONAL INDUSTRIAL CONTROL BILL

As was anticipated, the Industrial Control Bill, last week, encountered a rather rocky road in the U. S. Senate. In fact, the Senate Finance Committee, on motion of Mr. McAdoo, when it voted against the licensing provision, stripped the bill of one of its most vital clauses. This provision, however, was restored by the committee Monday evening by a vote of 12 to 6, thus rescinding its action of Friday.

Associations and firms which have been supporting the measure are still for the bill in principle, but are vitally opposed to many of its provisions. The greatest opposition apparently arose because of the fact that under the bill domestic manufacturers were given no protection from foreign competition. Another question worrying some industries a great deal was the labor situation under the bill, especially collective bargaining.

At a meeting in Washington last week, the National Association of Manufacturers, which has been sponsoring the bill and in fact helped frame some of its provisions, strenuously attacked some of its sections.

In spite of the rougher going in the Senate, however, some authorities, whose opinions are entitled to great respect, predict that the bill will be enacted in substantially the form in which the administration wants it. In the meantime, General Hugh S. Johnson, who will head the new organization, is setting up his offices in the new Department of Commerce building. He will utilize the Commodity Division of the Department as the nucleus for his new organization.

Among others who were expected to see General Johnson during the week, was S. L. Willson, president of the American Paper and Pulp Association, but no report of this interview is available at this writing.

That the national recovery bill pending before the Senate Finance Committee is apparently not "just a temporary thing," is emphasized by F. H. Figsby, partner of Ernst & Ernst, accountants, in a statement relating to the responsibilities of trade associations under the proposed act.

Trade associations, it is declared, are in position to determine whether our future national policy will be a middle course, or whether it must be in the general direction of state socialism, with all its crudities, or in the direction of something even more radical.

"The government hopes to rationalize trade and industry," Mr. Figsby says, "as has already been done in England, Germany, France, Italy and Russia, so that each trade and industry can be directed and controlled more or less as a unit, rather than as a loosely associated aggregation of independent and competing units.

"Forces of economic and social circumstances are dictating these new alignments and organizations of trade and industry, and political forces and varying political ideas are merely the instrumentalities through which the reforms are being effected. The point is that business men who are being disturbed and shaken by the new order of things should not give either credit or blame merely to the political administration which happens to be in power in the United States, but should recognize a world-wide and irresistible force which requires that business in the future shall be conducted along different lines than business in the past."

Regarding the position of trade associations under the pending bill, Mr. Figsby says: "The trade association, if it is good enough in the future, can steer us into the middle course, which is this: Private ownership, private management, private initiative, plus control, or supervision, or direction for the public interest. This middle course is the aim of the proposed new law. The bill is so framed as to leave initiative to trade groups if they will take it. Otherwise the government will dictate.

"The trade association, therefore, has been vested with tremendous authority. But the authority is merely potential. If it is seized and exercised by the trade association,—this is perhaps best in the public interest. If the government is finally required to assume the dictatorial authority, this is less good, for the government is illy informed of the multitudinous complications involved in the conduct of business and would commit tremendous blunders. The way to prevent the tremendous blunders is for the trade associations to seize their responsibilities, and to administer them wisely."

Suggesting several steps to be taken by associations, Mr. Figsby warns that there is no easy way, either in past practice or in future practice, of fixing selling prices which will permanently assure profit to producers.

"Arbitrary arrangements break down," he declares, "either under pressure of anti-trust laws (which now are

to be largely suspended), or under pressure of the economic laws of competition (which always operate). Even if producers of the same commodity do not compete, a substitute commodity is apt to compete. Thus, price fixing by and of itself is not to be relied upon, either with or without any new law.

"It is possible, however, to provide by agreement that selling prices shall not be below costs of production. Whether these costs of production shall be individual for each unit, or average for a group, is not yet determinable. Doubtless the practical administration of the new law will allow for a compromise, which will provide larger profits for efficient producers than for inefficient producers."

New Book on Coated Paper

Buntpapier-Industrie, a 276 page 8½ x 13 inch book on coated paper manufacture has recently been published by Paco-Verlag, Zurich-Oerlikon, Switzerland. The edition is limited to 250 copies.

The author, J. B. Meyer is a chemical engineer who has had considerable experience in the art of making coated paper.

The subject matter includes: single and double sided coaters and driers; paper for coating; adhesives, softeners, dyes, lake colors; satin white chemistry; art and chromo papers; coated book; coated lithographic paper; bright and dull enameled papers, glazed papers, surface colored papers, gummed paper; leatherettes and leather imitation; fancy and marbled papers; analysis of coated papers.

There are abstracts of articles and notes regarding coated paper making inventions (135 Germany, 56 American, 10 French, 2 Swiss and 1 Italian patents).

The book is printed in German but there is a glossary appended of 280 words, phrases and idioms dealing with the subject in which the English, French and Italian equivalent of the German are published.

Copies may be obtained through the Book Department of the Technical Association of the Pulp and Paper Industry, 370 Lexington avenue, New York, at $15 per copy, including customs, foreign exchange and postage.

Takes Over Eaton-Dikeman Brands

The District of Columbia Paper Manufacturing Company, Washington, D. C., has taken over the blotting paper business of the Eaton-Dikeman Company, formerly of Lee, Mass., with branch office at Sixth avenue and Spring street, New York. The company will continue all of the popular brands of blotting paper formerly made by the Eaton-Dikeman Company in addition to its own brands.

A stock of the better selling items will be carried at the New York City warehouse, Sixth avenue and Spring street from which customers can be served promptly. The company expects to maintain the same quality packing and service formerly obtained from the Eaton-Dikeman Company.

To Sell Meyers-Mesco Lines

The Merritt Engineering and Sales Company, Inc., Lockport, N. Y., announces that the Meyers-Mesco consistency regulator and Model C automatic water feeder are now being sold in the New England States by Charles J. Guenther, 834 North Main street, Leominster, Mass.

Receivership for Norwood Co.

A petition for a receiver for the Norwood Engineering Company, with a factory at Florence, Mass., was presented on April 27 in the Federal District Court at Boston and at a hearing held on May 8, Howard W. Hosford, general manager of the company for a number of years, and G. Wilson MacDow, treasurer of the company for the past ten years, were appointed receivers.

Mr. MacDow makes the following statement:

It was found necessary by the directors of the company to ask for a friendly receiver to protect the creditors of the company. The company had approximately $80,000 of unsecured notes falling due April 30, which they found they were unable to meet in full, consequently to avoid permitting a few of the noteholders securing a preferred position, it was deemed best to ask for a receiver for the purpose of conserving the assets and to place them in a position where all creditors would be treated on equal terms. There are ample assets to care for the liabilities, but due to the prolonged depression and present conditions, it was impossible to raise sufficient cash to meet the maturing liabilities. The petition asked the court to permit the company to continue operations and the receivers have been so instructed.

The company is the largest concern in the country manufacturing filtration equipment and has hundreds of installations all over the country. It would be a serious handicap to all concerned if the company had been forced by the creditors to close the plant and liquidate. For the preservation of the assets and the fair treatment of all interested parties, it was deemed wisest to have a receiver appointed for the purpose of continuing the business.

The plant of the Norwood Engineering Company is located in Florence, Mass., and the company was organized in 1893 and started with two small buildings. The present plant covers approximately four acres of land and consists of a large foundry where both iron and brass castings are made, a fully equipped machine shop, assembling plant and several storage buildings.

The plant has manufactured and installed water purification and filtration plants for towns and cities and large manufacturing plants such as paper and textile mills, dye works and other industries requiring pure water. The firm also manufactured a full line of paper mill machinery for finishing glassine, book, ledger and bond papers. It also installed filtration plants for swimming pools and more than 650 of these installations have been made in various parts of the country.

Commemorative Envelopes

September 1, "Paper" Day at A Century of Progress, Chicago, will be commemorated with special officially cacheted envelopes bearing the new Century of Progress stamps and mailed from A Century of Progress sub-station post office. (For the uninitiated, cacheted envelopes are those having a special design struck on the left hand side of the front, significant of the date and event to be commemorated.)

These unusual mementoes of "Paper" Day, of particular interest to stamp collectors, will serve as a permanent reminder of the official participation in A Century of Progress and will no doubt be much sought after by many non-collectors as well.

Lou W. Kreicker, 201 North Wells Street, Chicago, Cachet Director of A Century Of Progress, will be glad to handle all requests for these covers providing a service charge of fifteen cents for each cover is included with your request.

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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Chromium Plated Screen Plates and Suction Box Covers*

By A. F. Francis[1]

Screen Plates

The use of chromium on screen plates has become not only an economical proposition but also one that is necessary in the modern mill of today. It has been found among numerous mills in various sections of the country, under practically every operating condition, that chromium has increased by many times the life of plates, has, in most cases, absolutely eliminated the matter of cleaning, and has given the mill an exact slot size over a long period of time.

Because of the increasing importance of cleanness of the paper, some mills have found that chromium, when correctly applied to properly designed plates, absolutely eliminates the necessity of additional screens to produce a desired capacity with finer slots. An illustration which might be related in this regard is the experience of a board mill. As a result of competition in the various lines, slots were reduced from .032 to .030 inches resulting, of course, in a detrimental decrease in output. Preparations were made to install at least three new screens. Tests showed that such procedure made it possible to cut slot size to .026. However, when this matter was gone over very completely and all the operating conditions were taken into consideration, small experimental tests showed that 24 cut plates chromium plated allowed as great a capacity as was formerly produced by 32 cut plates. Chromium covered plates were installed, the desired capacity attained, and the mill is, at the present time, saving between six and eight man hours per week of operating time. To add to these resulting benefits a standardization of quality of their pulp has been maintained. Ordinarily, with the installation of 32 cut plates the slots would wear approximately .001 to .0015 within two or three months, depending upon the fullness of operation, whereas chromium plated plates were in service over six months, under the same operating conditions, and showed no wear. In other words, the slots measure the same today as when they were installed. Another benefit was noticed in the permanence of the plates. Under average conditions on their complete lot of screens the mill usually broke two to three plates every three months while the chromium plated plates, ¼ inch instead of ⅜ inch, have operated six months without a loss. This undoubtedly was accomplished by the additional strength afforded by the chromium and by the fact that the plates had been preserved in their original structure, corrosion having been prevented.

The management finds the quality of board has been improved beyond the expectations. Of course a great deal of improvement has been due to smaller slot size, but one other point which must be fully considered is the fact that the cleanest sheet is obtained when the slots show no wear and the edges remain sharp. To illustrate this further, I have found screen plates that within two years' time did not wear more than .0005 inch in slot size. The cleanness of the paper is changed very materially as soon as the edges were rounded over but before the slots showed any wear as far as size. The results of these experiments have, without a doubt, caused a great deal of interest and have changed to quite an extent the definition of a correct, efficiently operating screen.

A mill making pulp for fine tissue paper and certain grades of bond paper, after a year of development work and various tests, have now replaced all of their eleven cut pulp screen plates with 8 cut chromium plated ones. Because of the pleasing results (no decrease in capacity and a more even and cleaner pulp) this particular mill is, at this stage, having a complete line of plates chromium plated to a finished size of .006. The results of this have not been obtained, however, anyone wishing this information may procure it by leaving their name and address with me so I may forward such information in about a month, at which time the test will be completed. At this same mill, chromium plated Bird plates have produced a much cleaner sheet as a result of bringing down the slot size on a Yankee machine from 17 to 12 cut and on a fourdrinier machine from 14 to 9 cut. However, this has only been a start, for exact tests show that the capacity with the smaller cut plates is better at this time than was previously obtained with the larger cut plates without chromium. The tests will proceed by bringing the plates on the Yankee machine from 12 to 10 cut and on the fourdrinier machine from 9 to 7 cut.

At another large bond mill in the East an experiment is being conducted whereby a complete installation of 6 cut plates is being made in the Bird screens of one machine in which 12 cut plates have previously been used. Experiments in still another mill using all rag

* Presented at the spring meeting of the Pacific Section of the Technical Association of the Pulp and Paper Industry, Longview, Wash., May 5-6, 1933.

[1] Sales manager, paper mill division, Chromium Corporation of America, Milwaukee, Wis.

stock have resulted in the change from 14 cut plates to 9 cut. The capacity in this mill is also holding up and they expect, within the next few months, to go from 9 to 7 cut. I might add that in this particular mill, a 14 cut plate would wear to 17 in less than three months' time while 9 cut plates, chromium plated, have at this time been in installation over two years. Another example which will illustrate the efficiency of chromium plated screens has been reported from a mill in the East. Upon the installation of one plate in a Bird screen of nine plates, the stock output occurred uneven. Checking into this, they found that they obtained the greatest amount of pulp each time the chromium plates arrived at the outlet. The mill reported that the additional amount that passed through the chromium plate was very substantial, otherwise it would not have been noticeable with the naked eye.

The results of these tests, various experiments, and research work have resulted in a situation as one mill manager expresses, "No paper manufacturer can afford to be without the advantages and benefits of this new standardization of screening operations provided by the use of chromium." Various other mills have expressed the fact that the use of chromium, considering only the idea of an even slot size and elimination of wear have cut their screening costs about 70 per cent, with the plates still in good service to effect further reductions.

Suction Box Covers

Suction box covers, since the commercial manufacture of paper, have been a source of endless trouble and expense. Many times a wire or felt is ruined in a very short time from the use of one which is not in the correct condition for use. To overcome this, covers of almost every conceivable design and material have been tried. Mills have found that with certain materials, highly polished, such as bronze, brass, copper and glass the result would be fairly good for a short period of time. However, all at once they would roughen up and at this point spoil a wire or felt in an unreasonably short time. These mills have tried other materials such as bakelite, micarta, steel, stainless steel, phosphor bronze and almost every kind and form of wood. After years of experimenting by different mills and different paper mill machinery companies all over the country it was finally generally accepted that wood covers made of ingrain maple were the most practical and economical for general paper mill use.

The one great trouble with wood covers is the fact that they are not permanent. There is a continual ungovernable change taking place from the time they are installed until the time when they become in such a bad unusable condition whereby it is almost an absolute necessity as far as production and quality is concerned to remove them from service for reconditioning. It being a general practice to take out a wooden cover every week or so and plane it down, by a man well skilled in the art, so as to give the best results. After it is planed either straight or crowned it is only in service a short time before anyone or a multiple of the following developments may occur. It may crack, warp, groove, hollow out, plug up and in most cases become coated with a thick slimy substance. Any one or a number of these can only lead to detrimental results. In the first place suction efficiency will be irregular. It will be cut down and in some instances as high as 40 to 50 per cent. The wire or felt life has been reduced, and in most cases greatly reduced. This results in unnecessary expense that could and should be overcome.

There is one easy, quick, sure, safe way to overcome these difficulties. This was discovered after a great deal of development and research work. A chromium plated suction box cover has all and many more advantages than a wooden cover and it has none of the disadvantages. To point this out further may the following advantages be mentioned.

A chromium plated cover has less friction than a wood cover under ideal operating conditions, namely when a wooden cover which is kept in perfect order, smooth and always wet. It stays clean and remains accurate and will measure up and correspond with the original design a long time after a cover of any other known material has long been discarded.

A chromium plated cover, because of its advantages, allows for many important economical changes in suction box cover designs. It is so designed that it is reversible. In other words if for any reason an accident may happen to one side it may be reversed and it will be found all ready for use on the other side. These covers are all fitted up, marked and tested so there is no trouble in making use of their reversibility.

A chromium plated cover user on felts advises that suction has been doubled, felt life increased 30 per cent, and above all a sheet with 1½ to 2 per cent less moisture is obtained.

A chromium user advises that on a machine running from 650 to 800 feet per minute a 30 per cent increase in wire life has been obtained as an average over a considerable period of time (six to eight wires). Another chromium plated suction box cover user advised that on a machine running from 1000 to 1200 feet per minute the wire life has been increased 30 per cent. Still another chromium plated cover user reports that comparatively in the same machine it was necessary to clean wooden covers on an average of 52 times a year while it was not necessary to do anything whatsoever to chromium plated covers after one and one-half years of actual running time.

A chromium plated cover is the hardest, smoothest, cleanest, and most flawless, most economical and most standard cover yet to be placed on the market.

A test, the results of which will no doubt be of interest to the majority of paper mill officials, is as follows. In a mill making tissue and various papers of this light weight nature, the management conducted experiments on obtaining a drier sheet by changing from 6 inches to 8 inches of vacuum. However, with the use of ordinary suction box covers, it was necessary to revert to the 6 inches of vacuum because of the very substantial decrease in felt life (cut down approximately 40 per cent). After considerable experimental work and minor changes in operating conditions it was found that by the use of chromium they could go to 12 inches of vacuum, obtaining a 1½ to 2 per cent drier sheet and obtain 30 per cent saving over their old felt cost encountered when running at 6 inches of vacuum. Besides this, it was ordinarily necessary to clean the old type covers once a month and to plane them on an average of every three months. Under the improved methods, which should cause expectations of a much more severe wear on the felts and the chromium plated covers, the covers have been in operation over two years at the present and have never had anything done to them or been removed from their position in the machine. This performance, as reported by the mill using the covers and by other concerns familiar with the installation, has gone a long way toward a more economical operation of the machine and a standardization that will work towards a better, drier sheet of superior quality at a lower expense to the manufacturer.

Developments in Design of Modern Fourdrinier Paper Machines*

By J. E. Goodwillie[1]

It is always an inspiration to be present at a TAPPI convention and learn of the recent technical advances in the paper industry. Real progress is being made every year toward a better understanding of the fundamental physical and chemical relationships underlying the processes we use, the technic of control is steadily improving and many of the disturbing variables in operation are being eliminated. In spite of all of these advances, I would like to call your attention to the fact that it still takes a good papermaker to turn out a creditable sheet of paper There are so many ways of going wrong in the forming and drying of a sheet that even with a furnish of the best quality and uniformity, it is essential conditions on the machine and the setting of the various adjustable parts of the machine itself be just about perfect if present day standards of quality and speed of operation are to be met.

The function of the paper machine designer and manufacturer is, of course, to place in the operator's hands the very best known equipment for this particular requirements, and in this way assist him in making the best sheet possible from the stock furnished him. We also have the requirements that this be done at the highest possible production rate, and at the lowest possible operating and maintenance cost. The modern fourdrinier paper machine is keeping pace with the requirements of the industry by a steady succession of improvements and I believe you will be interested in going over very briefly some of the advances in machine design recently made by the engineers of the Beloit Iron Works.

Slices and Shakes

Starting up at the head box, a new slice has been developed which gives a maximum of flexibility to meet the varying conditions of stock, machine speed, and type of sheet. The complete unit is made up with one or two slices that can be adjusted in the direction of the machine relative to the breast roll. The second or last slice has an adjustable lip that is used for leveling the sheet; this lip has been carefully designed to eliminate all chance of lumps collecting at this point. The slice as a unit is strongly mounted on a stiff, rigidly supported apron board which is fitted with a convenient method for securing the apron cloth. All of the different slice adjustments can be made while the machine is in operation.

The shake for the table roll section is now usually made in two or three sections, so arranged with joints and pivots that the stock can be shaken at the point desired. This makes it possible to suit the location, the amount and the speed of the shake to the condition of the stock, the type of sheet, and the machine speed. The table rails are of steel, designed for maximum rigidity and minimum weight. The roll shells are of special aluminum covered with a material which protects the roll from the corrosion which would result from direct contact with paper stock. The mounting of the table rails and the connections between these rails and the shaking arms is made of a strong, flexible material which has the characteristic of being able to withstand continuous flexing action without developing fatigue or crystallization.

Suction Boxes and Rolls

It is usually desirable to oscillate the suction boxes to keep the wire free and prevent grooving of the box covers. Older designs have embodied various arrangements of sliding parts, and the resulting wear has given trouble due to misalignment. To prevent this the boxes are now mounted on rails which in turn are supported on flexible members; the general construction being very similar to that used in the new table roll section support. Another important improvement at the suction boxes is the incorporation of individual water separators in each box. This permits adjusting the vacuum on each box by throttling its connection to the common vacuum header, without any danger of the violent fluctuations in vacuum that usually accompany any attempts along this line. The boxes are now made of stainless steel, giving great rigidity in the direction of wire travel to avoid any possibility of chattering.

The wire stretch is now entirely automatic. Having decided upon the wire tension to be carried, it is only necessary to place the corresponding weights on the counterweight system for the stretch roll and that tension will be uniformly maintained regardless of the relative positions of the tension roll and the adjacent rolls.

There have been no recent changes of any consequence in the design of the Beloit suction couch roll and these rolls are continuing to make wonderful records of trouble-free service in a long list of mills. The removable fourdrinier arrangement has been simplified somewhat further; for example, the breast roll mounting has been changed so that the roll swings down on a pair of arms when a wire is to be changed.

Rubber covered suction presses have been in service too long to be considered a new development, but their true value as an all-around contribution to papermaking is still not fully appreciated. There have been very few instances in the history of paper machine development where a single item of equipment has effected such a broad general improvement. A great volume of operating data now clearly shows that the rubber covered suction press makes possible the production of a better sheet of paper at higher rates of speed, and this with substantial reductions in felt costs and steam costs. They give you a safer and better running press section and take a big load off the shoulders of the papermaker.

In connection with the press section, the top press roll mounting has recently been very considerably improved. In the older designs, the pressure between the rolls was secured by means of weights and a multiple lever system; this arrangement created a tendency for lack of uniformity not only because of friction at the various bearing points, but also because of the very considerable inertia of the heavy parts. If rolls or journals became out of true even a slight amount, the levers and arms would move up and down; the result was that when the weights were moving up the nip pressure was heavy, and when the weights were moving down it was light. To

* Presented at the spring meeting of the Pacific Section of the Technical Association of the Pulp and Paper Industry, Longview, Wash., May 5-6, 1933.

[1] Engineer, Beloit Iron Works, Beloit, Wis.

overcome this situation the new Beloit method of press weighting was developed.

Each press section felt is provided with a motor operated stretch device. A meter indicates just what tension is being carried in the felt at all times while adjustments are being made.

The Dry End

The new chain drive for the drier section has proved to be a very practical and advantageous arrangement. The drive is completely enclosed in a sealed casing, thus keeping the oil in and the dust and dirt out. An automatic unit has been developed which holds back lash to a minimum, even in case the main drive unit should stop and the inertia of the driers carry ahead for a short time. A new high speed water remover has been developed which keeps driers free of water at all times, this regardless of whether the machine speed is in the lower range where the water tends to form a pool in the bottom of the driers, or in the upper range where it tends to form a complete film all around the inside of the drier shell. A balanced type of steam joint has been perfected. This is an oilless fitting embodying a carbon disc, and is very nearly frictionless at all steam pressures.

Trend Toward Finger-Tip Control

Lack of time prevents a consideration of many new features in calender stack, reel and rewinder design. The tend is all toward finger-tip control with reliable indicators to show the operator just how his machine is running. Means are provided for winding reels of just the desired degree of hardness. The tension in the sheet going to the rewinder is controlled by air pressure in a cylinder and an indicator shows the amount of that tension. Finished rolls are automatically removed from the rewinder and deposited upon trucks or conveyors. In one arrangement, the winder shaft is withdrawn from the rolls and returned to its position in the machine all without any effort other than the pressing of a button.

The Beloit mechanical drive has been supplemented with some new units which further increase the flexibility and dependability of the drive. The enclosed hypoid and spiral bevel gear units with their hardened steel gears, anti-friction bearings, positive lubrication and oiltight enclosing casing are well known. A new flexible coupling has been designed which does not need lubrication or any attention after its original installation. This coupling is of the micarta disc type and can be used in pairs connected by a length of floating shafting allowing for a maximum of misalignment. A very interesting development is a new magnetic clutch which, while of comparatively small size, has an unusually high clutch capacity and a very small current consumption. Its arrangement and construction have been carefully worked out with the result that clearances can be adjusted or friction surfaces replaced without delay and without any special skill or experience being necessary.

Solvent Sizing

Some time ago the Beloit Iron Works became interested in the possibilities of a new process brought out by the Minton Vacuum Dryer Corporation called solvent sizing. The first commercial installation of this process has been made in the mill of the Longview Fibre Company, Longview, Washington, and for the past several months Beloit has been cooperating with the Minton Corporation and the Longview Fibre Company in development work on this installation. Very encouraging progress has been made and it is expected that some interesting data will be available in the near future.

A brief description of this process may be of interest to those who are not familiar with it. It is essentially the sizing of paper after the forming and drying operation has been completed using solutions of rosin, wax, synthetic resins, or any one of a number of other sizing agents in a volatile solvent. The unsized sheet is passed through the nip of a size press where it is impregnated with the solution, the solvent is then evaporated from the sheet leaving the sizing material behind. This entire operation is, of course, carried on in an enclosed chamber and the solvent recovered for reuse. No sizing material of any kind is introduced into the beater or stock system; to illustrate, a sheet which is to have eventually a very high degree of sizing would be formed and dried in the water-leaf state, and before passing into the solvent sizing press would be about as absorbent as a sheet of toweling.

It has been repeatedly demonstrated that leaving sizing material out of the beater results in a stronger, better sheet of paper. This is probably due to the formation of a better bond between the fibers themselves when no sizing is present. The sizing material is used more effectively by the solvent method, resulting in either a higher degree of sizing or the same sizing with less sizing material. Other advantages are easier preparation of the stock, better wet end conditions and easier drying.

Credit Due Longview Fibre Co.

In the development work at Longviews, most credit is due the executives and staff of the Longview Fibre Company for their fine cooperation and very helpful suggestions.

A Correction

In the article entitled "Relative Stabilities of Bleached Rag Half Stocks and Bleached Purified Sulphite Pulps to Degradation by Celcium Hypochlorite Solutions," by Harry F. Lewis, printed on pages 41 to 46 inclusive in the issue of THE PAPER TRADE JOURNAL of May 11, the following corrections should be noted:

In Table II, column 5, page 44, the second value in the column is 14.538 for the oven-dry weight. This should read 14.535 and the percentage loss in the last column of the same table should be +0.13 instead of +0.12. Similarly in the second half of the same table, the top figure in column 8 should be 14.553 instead of 14.547 making the percentage loss +0.25 instead of +0.21. In the same column value 12, given as 14.033 should be 14.048 and the percentage loss 2.58 instead of 2.68.

In Table III, column 8, page 44, the value 14.431 should be 14.467 making the percentage loss —0.07 instead of —0.31. The twelfth value in the same column should be 13.595 instead of 13.605 making the percentage loss 6.65 instead of 6.58. In the second half of the table, the fifth value in the fifth column should be 9.587 instead of 9.682 and the percentage loss 1.69 instead of 2.65.

On page 43, section 4 "Copper Number," reference 2 is given at the end of the sentence under the subhead "Copper Number." This reference 2 should be placed at the end of "Copper Number" itself for it applies to this alone. This small paragraph is a summary of the significance of the entire analytical data rather than of Copper Number.

A Correction

Because of a typographical error in the article entitled "Valley Iron Works Joins TAPPI" in the Technical Section of the PAPER TRADE JOURNAL of May 25, it was stated that this concern employs 25 men. This is obviously incorrect. The item should have read 225 men.

The Surface Porosity of Paper as a Measure of Finish*

By John Campbell[1] and Ralph A. Masten[2]

Abstract

A description of a device designed to measure the surface porosity of paper and thereby obtain an indication of its degree of finish.

Surface porosity may be defined as the rate of air flow through the voids in the surface of paper. Finish may be defined as the smoothness of paper in a mechanical sense, distinguishing from gloss, defined as the optical characteristic of paper surfaces in the sense of diffusely and specularly reflected light.

Fig. 1 illustrates an instrument for measuring the surface porosity of paper. This consists essentially of two blocks, E and F, each having a circular cross sectional contact area of one square inch; with one surface of each lapped and polished so that a sample may be placed between the two surfaces. The paper is then subjected to the one-half pound weight of the top block and also centrally subjected to an air pressure of 12 inches of water, equal on both sides of the sample. Air then passes outward through the voids in the sheet surfaces. A measurement of the time in seconds for a 5 cc air flow is taken as the surface porosity of the sample, indicating its finish. An air flow of 5 cc is usual, but for papers having a very low finish 10 cc to a maximum of 30 cc flow measurement is possible.

The mechanical means for developing air pressure at the sample held between the two polished surfaces consists of two identical cylinders B containing oil, mercury, or other medium in which cylinders A, with the top ends closed, are floated. This pair of cylinders of identical construction develops equal air pressures and automatically maintains same practically constant throughout the period of test. The inner cylinders A have 5 cc graduations as shown so that the time may be measured for known air flows.

Manipulation of Tester

The method of operation consists of raising cylinders A upward so that these are held in a raised position by H. The sample of paper is then placed between blocks E and F at Q with the top block E resting concentrically over block F. Inner cylinders A are then released, developing equal air pressures on both sides of the sample. Graduations M on both cylinders are then timed in passing the top surface N on both cylinders B. Thus, the time for the passage of a known quantity of air is measured. This time interval is greater as the finish becomes higher.

Average results from individual tests on ten samples should be obtained for the specific grade of paper under test. Constant humidity conditions are preferable.

To determine the exact air flow measured by this type of a tester, the surface porosities of several samples, felt and wire sides, were obtained in the usual manner after which the felt side was sealed against air flow. In sealing, various grades of sheet rubber, such as dental, glove, and tire patch, were tried with no success. Gutta percha and shellac were also not suitable. A resin dissolved in petrolic ether gave very satisfactory results. This was applied to the block surfaces, allowed to evaporate to an adhesive, yet non-penetrating, state. With the felt side sealed in this manner, additional tests were made on the same samples after which the wire side was sealed in like manner and the air flow then again measured. The results were as follows:

TABLE I

HIGH FINISH NEWS PRINT SURFACE POROSITY

(Seconds per 5 cc air flow)

Felt Side	Wire Side	Wire Side with Felt Side Sealed	Felt and Wire Sides both Sealed
191	201	92	622
203	178	124	530
224	202	75	661
229	237	108	595
213	176	101	657

These data indicate that the air flow, as measured by this tester, is that through the voids in the sheet surface, the flow through the sheet being about fourteen per cent of the total flow for this particular grade of paper. The sealing of one side seems to have caused a false reduction in the finish of the other surface.

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* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., February 13-16, 1933.

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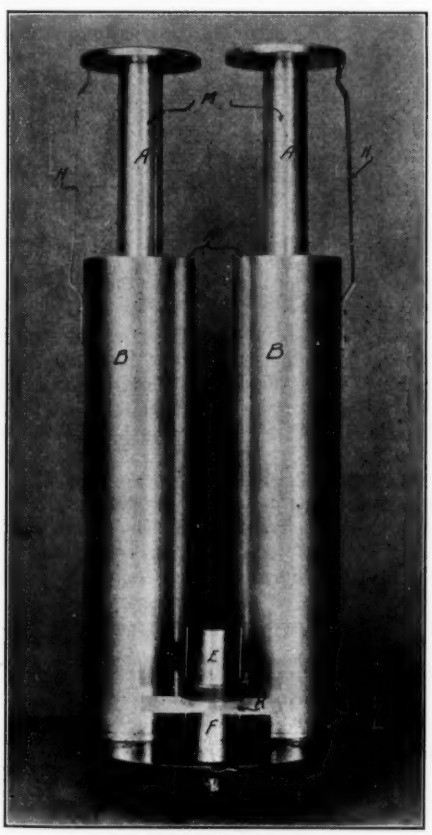

FIG. 1.

Although the physical density of paper undoubtedly enters into this measurement, as shown before, a prime object of the test is to determine the mechanical planular perfection of the paper surface. For this reason, the testing procedure should not materially affect the paper surface under test. It follows that the less the loading weight, the greater will be the sensitivity of the tester toward detection of changes in the paper surface on account of less "ironing out" owing to the weight applied. greater sensitivity leads to larger differences in individual tests on samples cut from the same sheet of paper. Hence, uniformity in quality is more easily detectable. The loading pressure of one-half pound per square inch, which is actually reduced about 0.02 pounds by the constant lifting effect of the air pressure exerted on the top block, was found to have no effect upon the surface porosity over the period required for four successive tests on eight samples of news print.

TABLE II

RESULTS OF FOUR SUCCESSIVE TESTS

Total Wire and Felt Sides, Seconds per 5 cc air flow

Sample No.....	1	2	3	4	5	6	7	8	Average
First, 5 cc.....	92	92	92	96	111	84	92	88	93
Second, 5 cc....	88	84	88	103	104	88	84	88	91
Third, 5 cc.....	88	82	94	111	104	89	95	95	95
Fourth, 5 cc...	84	86	93	109	109	86	90	95	94

That analogous results are obtainable on duplicate instruments is indicated in Table III. The construction of such an instrument must necessarily be precision work with the block surfaces tested against a perfect surface such as a Johannsen block and then against each other to show no air leakage. Mechanically precise duplication of instruments is feasible so that discrepancies, if any, between tests on duplicate instruments are probably the result of actual differences in test specimens, rather than in the instruments. These differences in test specimens can only be ruled out by the proper number of tests to obtain a true average.

As an example of duplicity, the results of testing twenty-four samples of news print are given in Table III for two instruments, twelve samples on each instrument.

This surface porosity test on paper surfaces is important from the standpoint of an evaluation of quality production more suitable for better printing surfaces. It concerns itself with the mechanical perfection of the paper surface rather than any optical characteristic. It bears no specific relation to other tests on the same sample, such as density, gloss, caliper and oil absorption. A large number of individual tests indicate some relationship between these properties, such as surface porosity and density, but one is not convertible into the other on account of the many factors affecting each property.

TABLE III

Seconds per 5 cc air flow

Instrument No. 1		Instrument No. 2	
Wire Side	Felt Side	Wire Side	Felt Side
82	90	70	82
82	83	78	85
56	75	67	87
71	71	70	61
76	82	70	80
59	87	61	73
61	78	64	81
66	84	75	80
84	88	85	72
74	67	76	69
67	73	67	84
62	71	65	81
Average 70	79	71	78

The data expressed in Table IV give typical average results obtained with a tester of this type.

TABLE IV

Grade of Paper	Surface Porosity Air Flow—Seconds per 5 cc	
	Wire Side	Felt Side
Kraft (open formation)	13	18
News print	35	42
News print	70	77
News print	152	173
Catalogue	65	76
Rotogravure	100	125
Magazine	302	348

Advantages of the Instrument

This instrument has the following advantages:

1. The measurement of the wire and felt surfaces at the same time.
2. Low unit pressure applied to the sample causing no change in its finish.
3. Portability.
4. Ease of operation.
5. Short testing period.
6. Simplicity.
7. Analogous results obtainable on duplicate instruments.

Coating Committee Annual Report

During the past year the coating committee of the Technical Association of the Pulp and Paper Industry has been working along several lines for the good of the coated paper manufacturers.

Evaluation of Clays

First, in the raw material field, we have evaluated several samples of clays which were submitted as new materials on a competitive basis with clays now used in this field.

These clays were made into standard coating color formulae and run on a laboratory coater and calendered under controlled conditions.

TYPICAL ANALYSES OF RESULTS

Formulae:	Standard Clay	Submitted Sample
Clay	86.5 per cent	86.5 per cent
Casein	13.5 per cent	13.5 per cent
Soda ash to cut casein	15.0 per cent	15.0 per cent
1 per cent additional hydrated lime added to submitted sample.		
Color Data:		
Solids	38.0 per cent	38.0 per cent
Viscosity	15 seconds	17 seconds
Temperature	79 deg. F.	79 deg. F.
pH	8.5	10.5

Submitted clay was hard to make down. After 3 hours agitation, it still contained gritty and flocculated clay.

Submitted clay was difficult to spread. Possibly because of the gritty material and flocculated clay in the coating color or because this color seems to part with its water readily.

Submitted clay color ran very dry on the coater.

The submitted clay gives a slightly higher finish reading and seems to have a better surface than the Standard clay. Although the color is natural, it is bright and could be tinted to a close commercial match for the standard clay. The submitted sample was soft sized and it is doubtful if the above advantages would be apparent if the sheet was harder sized.

It would take 1 to 2 per cent more casein to size this clay. This is quite objectionable. Raw stock used was a 50 pound sheet.

SHEET TESTS AFTER FINISHING UNDER STANDARD CONDITIONS. HAND SAMPLES.

	Submitted Sample	Std. Sample
Coat weight	17 pounds	17 pounds
Finish (Glarimeter)	39.0	36.5
Surface	1	2
Sizing	Fiber pull 5.5 wax	O.K. No. 7 wax

Evaluation of Casein

Nine samples of casein obtained from various coated paper manufacturers were evaluated in the laboratory using standard procedure for making coating color and coating in connection with the possibility of setting up standard samples for reference or comparative work. These results will be reported under a separate report.

Samples of improved caseins and at least one special substitute for casein other than starch were also tested.

RESULTS OF ANALYSIS OF FOAMLESS CASEIN VS. STANDARD SAMPLES

	Tests	
	Foamless	Standard
Solids	91.4 per cent	91.9 per cent
Acidity	0.76 per cent	2.66 per cent
Ash	1.00 per cent	2.99 per cent
Insoluble matter	0.008 per cent	0.041 per cent
Fat	0.26 per cent	0.16 per cent
Viscosity (Stormer)	11.8 seconds	12.0 seconds
Color dry casein	Good	.....
Casein solutions	Dark	Light

Conclusions After Making Standard Laboratory Coating Comparisons

The foamless casein showed the following characteristics:

Advantages:

(1) Better make down and less foam in cutting.
(2) Less pin hole tendency.
(3) Coating quality, sizing strength, etc., equal or possibly a little better than Standard.
(4) Slightly lower viscosity coating color.

Disadvantages:

(1) A distinctly lower color value.
(2) A higher cost per ton.

COLOR FORMULA USED:

Clay—56 per cent; Satin White—25 per cent; Casein—19 per cent.

Casein cut with soda ash (15 per cent), and borax (3 per cent).

RESULTS MISCELLANEOUS TESTS ON FINISHED SHEETS

	Std. Casein Formula With Evener	Foamless Casein Without Evener	Foamless Casein With Evener
Coat weight	15 pounds	15 pounds	15 pounds
Finish	41	40.5	41.5
Wax test	Fiber pull No. 7	Fiber pull No. 7	Slight fiber pull, No. 7
Color of coated sheet	1	2	2

Six inquiries were received and answered to the best of our ability on the use of Lexene in coated paper.

Two inquiries regarding coating machine procedures, one from a coating manufacturer in England.

Two new coating processes were brought to the attention of your committee, one a spray coating process, and the other solvent coating. The spray method is of course not new, but improvements have been made, although to date we are not acquainted with any company who are using the spray method successfully.

Solvent coating, using standard coating minerals is a process about which we know very little at this time.

Bibliography

Articles Published by Committee Members:

Articles or Paper Contributions from Committee Members:
Roll Coaters vs. Brush Coaters. By F. Egan (Paper Trade J.).
Opacity and Whiteness Test for Paper Coating Pigments. By H. R. Rafton (Paper Trade J.).
The Improved Wax Test for Measuring Coated Paper Sizing. By H. M. Annis (Paper Trade J.).

Miscellaneous Abstracts and References Pertaining to Manufacture of Coated or Treated Paper:

"Process for the Manufacture of a Substance which Imparts a High Gloss and Pure White Color to Papers, Fine Papers, Illustration Paper and Its Substitutes." Siebenhirtner Chem. Industric-Werk, G.m.b.H. Vienna. Czech. pat. 33,412.—Saponified stearine is added to the salt of a heavy metal, especially those of the zinc group and the mixture formed is added to the paper stock. For example, 15 parts of stearine is saponified with about 20 to 25 parts of potassium or sodium hydroxide and to this is added a heavy metal, such as 100 kilograms of zinc sulphate.—J. F. O.

"Process for the Manufacture of Transparent Paper by Coating Both Sides of Pergamyn Paper with a Colloidal Substance which Renders the Paper Transparent." Friedrich Karl Wickle, Feucht. Ger. pat. 522,634 (Dec. 11, 1928).—A gel made of glycerine and alkali silicate is used in the coating. The content of free alkali in the alkali silicate is completely or partially neutralized by the addition of weak acids, such as lactic acid before the coating with the gel.—J. F. O.

"Process for the One Sided Coloring, Sizing, Impregnating and Similar Operations on Paper on a Paper Machine." I. G. Farbenindustrie A.D., Frankfurt a.M. Aust. pat. 121,803 (Nov. 15, 1930).—The sheet of paper which is still moist is led around a roll in such a manner that it surrounds the under part of the roll firmly, whereupon the roll with the sheet of paper revolving around it is immersed in the impregnation liquid.—J. F. O.

"Paper-Coating Machines." Lynn B. Case, assignor to John Waldron Corp. U. S. pat. 1,827,640 and 1,827,641 (Oct. 13, 1931).—These two patents provide for an improved curved coating table, on which the paper is kept evenly stretched during the coating operation, and over which it is carried by means of a rubber apron. The coating material is distributed over the surface of the paper by means of batteries of vibrating brushes which are operated so as to insure full contact of each brush with the paper throughout its entire reciprocation. The coated paper is drawn through the machine by leading it over an endless wire passing around the suction roll. The color applying device is driven by means of a rubber belt from its receiving end. In order to thread the paper through the machine, means are provided for lowering the coating table out of contact with the brushes. Chilled iron rolls are provided at the point at which the coating material is applied to the paper in order to prevent or reduce eroding of the rolls by the grit which may be present in the coating mixture.—A. P.-C.

"Paper Coating Composition." Donald B. Bradner, assignor to Champion Coated Paper Co. U. S. pat. 1,826,726 (Oct. 13, 1931).—A web of paper is coated with an aqueous mineral coating composition containing a mineral pigment such as clay in major amount and an adhesive such as casein in minor amount, and pin hole defects in the resulting coating are reduced by dispersing a small proportion of pine oil in the composition.—A. P.-C.

"Preparation of Coating Material for Paper." C. Arnold, assignee of I. F. Laucks, Inc. Brit. pat. 356,287 (April 17, 1930).—Oleaginous seeds, such as soya bean, cottonseed, castor seed, tung nut, etc., preferably oil-mill presscake, are ground and extracted with, for example, 2 liters of 0.5 per cent slaked lime solution per 100 parts of meal at 15 deg. C. for about 12 hours. The separated liquor is then heated to 50 deg. C. and its pH is adjusted to 4 with dilute sulphuric acid to precipitate the protein. This is collected, washed, and dried at about 32 deg. C. Other alkalies, such as caustic soda or sodium sulphite, may be used in the preliminary extraction, but a subsequent prolonged treatment with dilute milk of lime is necessary to modify the protein so that the dried product is readily dispersible in aqueous sodium carbonate, borax, etc. These proteins are particularly suitable for coating mixtures containing satin white since they are unaffected by free lime.—A. P.-C.

"Manufacture of Coated Papers." F. W. Bailey, S. F. W. Crundall, H. Spence, and P. Spence & Sons, Ltd. Brit. pat. 360,034 (Aug. 1, 1930).—Paper is coated with a "color" or "enamel" containing finely-divided and close-textured, anhydrous calcium sulphate in complete or partial substitution for barium sulphate, together with china clay and the usual adhesives.—A. P.-C.

"Treating Kaolin for Use in the Paper Industry." Rudolf Illner and Camillo Furst. U. S. pat. 1,840,363 (Jan. 12, 1932).—Crude kaolin is "coagulated" with milk of lime, then neutralized with sulphuric acid of a strength of 60 deg. Baume; powdered sodium hyposulphite is added in the proportion of about 0.1 per cent the amount of dry kaolin, together with about 0.2 per cent of sulphuric acid of 60 deg. Baume, while stirring for about 30 to 60 min. The material is then neutralized with milk of lime (an excess of about 0.1 per cent calcium oxide being used), with further stirring for about the same length of time. A small proportion of coloring material, such as an indanthrene dye is then added, followed by stirring, pressing and drying.—A. P.-C.

"Production of Coated Paper." Donald B. Bradner, assignor to the Champion Coated Paper Co. U. S. pat. 1,838,358 (Dec. 29, 1931).—A substantial excess of an aqueous coating mixture, such as a casein-clay-water mixture, is applied to a traveling web of paper, excess coating is removed by a special doctor so as to leave a smooth coating of the desired weight, and the coated paper is dried.—A. P.-C.

"Calendering Coated Paper." Raymond A. Steffen, assignor to the Champion Coated Paper Co. U. S. pat. 1,842,848 (Jan. 26, 1932).—A coated side of the paper is subjected to frictional contact with the surface of the paper itself in a roll-system which is described.—A. P.-C.

"Coated Paper." Peter Spence & Sons, Ltd. Bdlg. pat. 381,644 (Aug. 31, 1931).—The paper is coated with a color or enamel composed entirely or partially of finely divided, close-textured, anhydrous calcium sulphate.—A. P.-C.

"Cylinder for Paper Coating Machines." Charles W. Mayer. U. S. pat. 1,827,562 (Dec. 22, 1931).—In order to maintain uniform temperature distribution in heated or cooled cylinders used on coating machines, a frustro-conical drum is placed inside the roll with its larger end adjacent the outlet of the roll. Blades are associated with the large end of the drum to facilitate circulation of the heating or cooling medium through the roll.—A. P.-C.

"Method of Applying Coating to Paper." Carl Munch, assignor to the Champion Coated Paper Co. U. S. pat. 1,847,065 (Feb. 23, 1932).—The coating composition is applied to the surface of a partially immersed rotating roll, and is transferred to the stock to be coated which, at the point of contact of the two surfaces, is moving in the opposite direction to the roll.—A. P.-C.

"Apparatus for Drying Coated Paper." Geo. B. Bailey, assignor to Thermox Incorporated. U. S. pat. 1,847,915 (March 1, 1932).—The drying chamber is formed as a series of flat nozzles discharging into one another. Owing to the venturi effect, the heated air which is introduced into the chamber along with the paper to be dried, and which accompanies the latter through the whole length of the chamber, prevents the paper from coming into contact with the walls of the chamber.—A. P.-C.

"Paper Coating Development Report." J. J. O'Connor. Paper Trade J. 94, No. 25: 35-36 (June 23, 1932); Tech. Assoc. Papers, Series XV: 295-296 (June, 1932).—An outline of the work carried out by the TAPPI finishing processing and converting committee from July, 1931, to Feb., 1932, with an outline of recent developments in the preparation of coating materials, coating machines and use of new coating raw materials and a brief review of recent literature (with abstracts).—A. P.-C.

"Paper Coating." Peter Spence and Sons, Ltd. Fr. pat. 720,702 (July 28, 1931).—Anhydrous calcium sulphate in a fine state of division and of close texture is used as a constituent of paper coatings.—A. P.-C.

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Attritional Versus Beater and Jordan Refining*

By Roger B. Brown[1]

Abstract

The need for better refiners is indicated and the difference in principle of refining by attritional type units and by conventional beaters and jordans is outlined.

It is possible with attritional refiners to:

(1) Reach any desired degree of wetness in one pass and without injury to the pulp.

(2) Produce refined pulps with maximum bursting strength at very low freeness.

(3) Obtain exceptionally high tearing strength where desired.

(4) Secure excellent results from either short or long fibers.

(5) Utilize pulps which cannot be economically refined in conventional beaters and jordans.

The continuous decrease in the tear curve of most sulphites and the decline from a maximum in the bursting strength curve of most any chemical wood pulp is shown to be a function of the refining equipment and not inherent in pulp.

Better Refiners Needed

The idea of refining fibers in attritional units has had numerous advocates during the past eighty years as the many patents on the subject indicate. There must be definite reasons why men have continued to develop this type of machine for the paper and board industry to supplant the almost universally used beaters and jordans of today and yesteryear. It is not solely because the attritional type is a continuous refiner for the jordan has this feature also. In spite of the widespread use of jordans they have several disadvantages which are well known to the industry. Only recently the president of a paper company, whose mill is a picture to look at, said with evident disgust, "I wish the jordan had never been invented!"

Limitations and Advantages of Beaters and Jordans

One obvious limitation of the beater for large scale present day requirements is that it is inherently a batch type of refiner. It was developed years ago to refine long textile fibers and the like into paper and for this purpose it is still widely used, though even in this service it has many faults. For this job it has one outstanding advantage which many other units lack: it can, because of its paddle-wheel circulation, refine long rag fibers into pulp for a paper machine without auxiliary refining equipment. Jordans and attritional type refiners can use rag stock only after the fibers have been shortened to the point where the stuff will flow to some extent, although fibers somewhat longer than are normally found in chemical wood pulp have no difficulty in passing through properly designed continuous refiners. It would appear that a better way to treat rag fibers is to cut them quickly (either dry or in a beater) till they attain the length of the longest wood fibers and then complete the refining in a continuous unit.

Another disadvantage of the beater as at present used is that it is not fool-proof. It is very easy for an experienced man to spoil a batch of pulp in the beater and it is practically impossible to have every batch the same or nearly so, even when this characteristic of uniformity is most carefully watched. Sigurd Smith [2] has summed up the situation in this way:

"If a beaterman is asked to say when he considers the stuff to be ready he *may* reply that the beating is finished when the stuff has become short enough or is sufficiently wet. Both of these qualities are of course important, and *if* the stuff has been shortened in the proper manner it *should* also be of approximately the desired degree of wetness; while conversely *if* the stuff is beaten wet enough it *should* also be sufficiently short. It is difficult to say whether the beaterman's judgment as to the stuff being short enough actually corresponds exactly to the attainment of a definite mean length of fiber; but for the present this will be presumed to be the case, and the productivity of a beater may, therefore, be stated as the number of kilograms of stuff which it will beat per hour to a given shortness." (Italics are the writer's.)

Beaters and jordans are well suited for the production of roofing and flooring felts because, among other reasons, it has been fairly well established that "Fibers in a beater (or jordan) lie transversely across the bar edges which is the most favorable position for cutting." [3]

Beaters and jordans as described are thus for most papermaking jobs limited in their output. If the clearance between the moving and stationary blades is decreased to give more wetness per unit of time the stock is cut more than is desired and the sheet characteristics sought are not attained.

Effect of Fiber Length on Sheet Properties

Just as the beater and jordan have been handed on by the rag papermakers to their brethren who make paper and board from wood pulp so has the idea that the fiber must be greatly shortened to make a good sheet been carried along in the art. It is true that unrefined chemical wood fiber seldom makes a salable sheet. The formation is much improved if the fiber be merely reduced in length although nearly all the other valuable qualities are thus partially lost. Happily there are other methods of improving the formation and at the same time enhancing most of the other desirable characteristics. It is these other methods which a properly designed attritional refiner is designed to utilize to a high degree.

It was noticed by the writer more than a decade ago that sulphite pulp refined in such a manner that it was impossible to cut a fiber gave an excellent sheet. This observation and many made since have led to the conclusion that it is a rare wood pulp which needs to have its fibers intentionally shortened to give the final sheet characteristics desired when the refining is to be done properly. Where fibers are too long for paper machine use (textile fibers, for example) it is much better from a quality standpoint that they be pulled apart rather than cut, and a well designed attritional refiner is designed to maintain automatically an optimum fiber length in this way. The mill using conventional beaters and jordans does the best it can with the equipment available to "draw out" or pull apart "the fibers which lie transversely across the bar edges in the most favorable position for cutting."

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* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., February 13-16, 1933.

[1] Member TAPPI, chemical engineer, 2548 Nottingham Way, Trenton, N. J.

[2] Sigurd Smith, "The Action of the Beater," page 41, English translation, 1923.

[3] Sigurd Smith, loc. cit., page 36.

Alignment of Fibers in Attritional Refiners

In the attritional type of refiner the fibers tend to roll themselves into threads or "rollies" and the latter rotate with their long axes radially disposed toward the center of the discs. In this position the fibers are refined with their long axes more nearly parallel with radially inclined bars in the discs. This difference in the alignment of the fibers is one reason for the difference in results between beaters and jordans on the one hand and attritional refiners on the other. The formation of "rollies" is more than a theory; it is a fact, since these "rollies" have been obtained in the refined pulp and have been removed from the refining surfaces after a machine was shut down when full of pulp. If the fiber bundles do not rotate quality results are not so readily obtainable.

Attritional Refiners vs. Long and Short Fibers

Since fibers are not usually treated singly in attritional machines but in the form of relatively long threads an attritional unit can refine fibers which are too short or stiff to form fibrages[4] in beaters and jordans and thus by them cannot be treated economically, if at all. A case in point is soda pulp produced from hardwoods. It is well known[5] that it is almost impossible (with beaters and jordans) to produce a paper of suitable physical strength from a furnish comprising soda pulp alone but a Brown-type[6] attritional refiner gives outstanding results on this fiber as Fig. 1 indicates. Another instance is the conversion of edger sawdust into pulp of 200 flobility and correspondingly high strength (equivalent to No. 1 groundwood) by well designed attritional refiners while conventional beaters and jordans give a pulp of approximately 50 flobility and similarly low strength.[7] This leads to the conclusion that much more satisfactory results can be obtained attritionally on shorter fibered pulps than it is possible to secure with conventional beaters and jordans.

On longer fibers such as kraft it is possible to obtain attritionally higher burst and tear values than are attained in practice with beaters and jordans. Tearing strength may be greatly increased by suitable adjustments of attritional units if a somewhat lower burst and higher freeness are desired. The following table gives some numerical results obtained on this hard beating fiber.

TABLE I

	Freeness[7]	Burst, Per Cent	Tear, Per Cent
Unrefined	810	25	209
Refined in Beaters and Jordans	550	100	189
Refined in attritional unit	560	109	208
	725	81	308

Attritional Refiners vs. Tear Curve

The tearing strength of most sulphite pulps decreases from the start of refining when beaters and jordans are used. Such a pulp was normally refined in a laboratory beater and also refined in an attritional refiner adjusted for high tear when the curves in Fig. 2 were obtained. Since the attritionally refined stock rose in tear value at the start while that refined in the beater showed a continuous decline, the pulp was again refined in the beater with extreme care to prevent the fibers from being cut. (No care is necessary when refining attritionally in a properly designed unit.) Samples were taken at frequent in-

[4] Sigurd Smith, loc. cit.
[5] Richter, G. A., Ind. & Eng. Chem., Vol. 23, No. 2, page 131, (February, 1931.)
[6] A unit containing two discs, one or both of which may rotate (similar to those used for years to grind grain). Stock enters at the center and is discharged at the periphery, provision being made for adjustment of the clearance between the discs which are supplied with suitable refining surfaces for the work to be done.

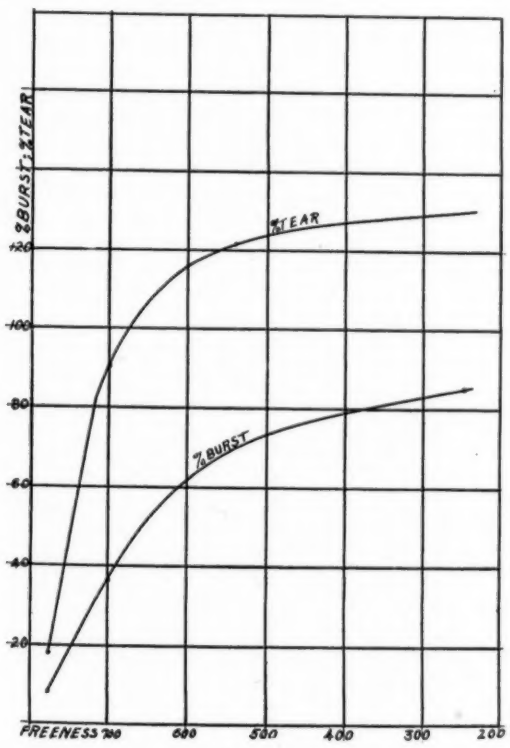

FIG. 1.

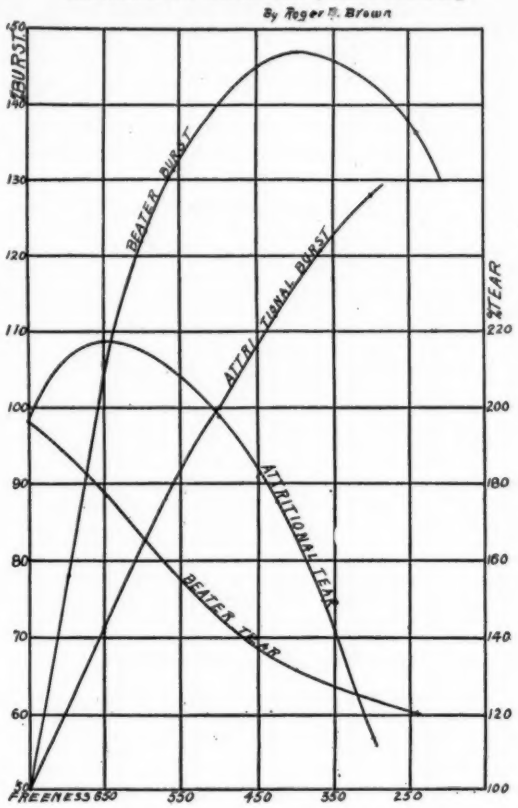

FIG. 2.

[7] Brown, R. B., P.T.J., 94, 35-38, (March 31, 1932) gives methods of procedure. Also Paper Trade J., 95, 28, (September 29, 1932). All burst and tear data was obtained on hand made sheets.

tervals during the first ten minutes but no rise in tear value occurred. This is a good illustration of the difference between the two types of refining and shows that the characteristics of the refined stock can be as greatly influenced by the design of the refining equipment as by the previous chemical treatment. When pulps are cooked to take advantage of the special characteristics of attritional refiners and the latter employed to treat them, long sought results will be secured.

Disc Refiner vs. Burst Curve

It is worthwhile to notice the difference between the curves for bursting strength development of this sulphite pulp when refined on the two types of equipment. That obtained from beater treated stock shows the typical development of a maximum with a subsequent decline. It is equally characteristic of wood pulp refined in a well designed attritional unit that it rarely declines after reaching a maximum, no matter how low the freeness. (See also Fig. 1.) The soda pulp referred to in the curves was converted completely into fibrillae by attritional refining without any decline in bursting strength being noticed having 100 per cent burst at zero freeness. And why should it when properly refined? Glycerine-free Cellophane has a bursting strength of 200 per cent. That the decline in bursting strength was inherent in the conventional equipment instead of being a characteristic of the pulp will come as a surprise to many.

No Time Element in Refining

Several years ago a superintendent who needed more refining capacity installed beaters in preference to jordans and confided to me that "The fiber needs time to take up water between wallops." It will interest those who still believe in this idea to know that any desired degree of "wetness" may be obtained by passing any papermaking fiber once through a properly designed attritional refiner, where it takes approximately 1/100 of a second for fiber to pass between the refining surfaces which are narrower than the span of your hand. As an example of this, unrefined sulphite in the mill of a leading paper manufacturer was converted into glassine paper by no other refining treatment than one pass through this machine. It is suggested that to be able to do so much refining in so short a time and not only not ruin the pulp but to produce an excellent sheet is fair evidence that the principle of attritional refining is right. The fact that burst does not decline is additional testimony to the correctness of the principle.

Efficient Defiberizer and Refiner

Attritional units may be operated solely as defiberizers or as a combination defiberizers and refiners. In the former case old papers in the form of pieces ½ inch squares can be reduced in one pass and without using beat to obtain a flakeless pulp of the same freeness and flobility as the original, indicating that the fibers themselves have not appreciably changed in length or wetness. In the latter instance coarse groundwood screenings are converted in one pass and without subsequent screening into a product equal or superior to No. 1 groundwood for news print when tested for drainage, rate, burst, tensile, tear and fiber classification (wet screen analysis). The strength data were obtained on handmade sheets. No jordan of conventional design is capable of such results as those mentioned in the next to the last sentence.

Results of Previous Attritional Refiners

Even if results obtained on all types of attritional refiners are not quite equal to those mentioned above it is easy to see why the idea of refining fibers attritionally has had many advocates during the past eight years. An attritional refiner patented in 1909 is described in the following terms in an advertisement written many years later:

"This is undoubtedly the most efficient refiner ever produced. . . . The only refiner which can be guaranteed to deliver absolutely uniform pulp. The action is such that unreduced fibers are automatically retained and receive extra treatment until properly reduced. No other refiner has this property which is the essence of refining. Large number at work on all classes of paper from greaseproof to news, in every class giving an improvement in quality, an increase in quantity, and thorough satisfaction."

This indicates that others have brought attritional refining to the attention of the industry before with some measure of success, yet beaters and jordans still carry the main refining burden of a traditionally conservative but rapidly awakening art.

The Future of Attritional Refining

No matter how correct in principle an idea may be or how beneficial its widespread application promises to become, the mass is slow to change its mode of thought. It seems necessary that some ideas must be presented by several men successively and each time in a different way before a presentation is finally obtained which secures first wide discussion and then final adoption. The object of this paper has been to add something to what has previously been said on attritional refining which might bring the industry in the near future fewer worries and more profit.

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* Contribution of the Permanence and Durability Sub-committee of the TAPPI Paper Use Requirements Committee.

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Power House and Mill Machinery

Litharge and Glycerine Mortars. George W. Gleason. Paper Trade J. 95, No. 15: 33-36 (Oct. 13, 1932).—Data are presented on the characteristics of mortars made from mixes in various proportions of commercial litharge, chemically pure and anti-freeze glycerine, three typical sands and Portland cement.—A. P.-C.

Making Steam Economically and Using it Efficiently. L. C. Kelley. Pulp Paper Canada 33: 423-427, 460-464 (Nov. 1932).—A description of the power plant of the Restigouche Co., Atholville, N. B.—A. P.-C.

Power Plant Remodeling Pays. Chester Reed Earle. Paper Ind. 14: 585-588 (Nov. 1932).—A brief review of developments in design of power equipment during the past ten years and their effect on power costs.—A. P.-C.

Corrosion of Metals in Mills. Zellstoff Papier 12, No. 9: 362-63 (Sept. 1932).—A general discussion of the causes of corrosion in pulp and paper mills, describing the metals and alloys used to combat this corrosion as well as the method of production and application. An excellent reference on the subject.—J. F. O.

Utilization of Wood Bark and Wood Refuse (sawdust) Especially as a Combustible. A. St. Klein. Zellstoff Papier 12, No. 8: 326-28 (July, 1932).—A summary of the facts gleaned from articles written in various countries. The difference between the effective heat value per kilogram of spruce wood and spruce bark is scarcely 1 per cent. Tables are given showing the value of this wood refuse.—J. F. O.

Graphite Greasing for Ground Wood, Pulp and Paper Machines. Erich Kadmer. Papier-Fabr. 30, No. 36: 544-45 (Sept. 4, 1932).—The German "Kollag" is a prepared solution containing 10 per cent graphite in oil. A 40-60 per cent saving of oil is claimed. The author gives the various uses and machines where this grease is well adapted.—J. F. O.

Rearranging the Entire Power and Heat Economics in the Pulp and Paper Mill of Paul Steinbock A. G., Frankfurt, O., K. Halle and J. Litterscheidt. Zellstoff Papier 12, No. 7: 289-91 (July, 1932).—By means of schematic diagrams the author shows the hook-up of the old power and heat system and its change to the new. Important details and facts are given of certain individual units.—J. F. O.

The Cooling of Superheated Steam in the Pulp and Paper Industry and the Evolution of the Necessary Apparatus. B. Muller. Wochbl. Papierfabr. 63, No. 35: 659-62; No. 36: 679-81 (Aug. 27, Sept. 3, 1932).—The author first discusses the purpose and advantages of cooling. It can be used for cooling the steam to the turbines, the steam used for cooking in the digesters and for cooling the steam to the dryers of the paper machine. The evolution and construction of the apparatus are then described, with many diagrams to show the operation and hook-up.—J. F. O.

Is Saturated Steam Better than Super-heated Steam? G. A. Matthaei. Wochbl. Papierfabr. 63, No. 30: 572-75 (July 23, 1932).—After a short discussion of the important principles of heat transfer, the processes for heating with various kinds of steam are described and the following conclusions arrived at. The coefficient of heat transfer of condensate super-heated steam is better than that of saturated steam because less condensation takes place. Non-condensing super-heated steam has a lower coefficient of heat transfer. The heat loss in pipe lines is greater with super-heated steam than with saturated steam.—J. F. O.

The Corrosion of Metals in a Ground Wood Mill. H. Andrews. Zellstoff U. Papier, 12, No. 7: 277 (July 1932).—*See* Technical Section 95:206—J. F. O.

Alum Feed for Paper Mill Waters. Richard T. Barnes, Jr. Paper Trade J. 95, No. 14: 25-27 (Oct. 6, 1932).—For the soft waters of New England, alkali is needed in conjunction with the alum used for purification in order to obtain the highest efficiency from the alum feed.—A. P.-C.

Blisters in Boiler Tubes. Thomas N. Parks. Pacific Pulp Paper Ind. 6, No. 8: 18-19 (July, 1932); Paper Mill 55, No. 29: 14-15 (July 16, 1932).—An outline of their occurrence and possible methods of preventing them.—A. P.-C.

Steam Super-heater Design and Construction. Anon. Paper Maker & Brit. Paper Trade J. 83: 544 (June 1, 1932).—A brief discussion of fundamental principles.—A. P.-C.

Boiler Feed Water Treatment. A. C. Embshoff. Paper Mill 55, No. 32: 10, 12 (Aug. 6, 1932).—A brief discussion, illustrated by means of examples, showing that no one method of feed water treatment is a cure-all for all boiler ills, but that each case must be studied both as a problem in water softening and also as related to the other plant operating conditions.—A. P.-C.

Miscellaneous

Engineering in a Paper Mill. John Ewart. Paper Maker & Brit. Paper Trade J. 83: TS186-192 (May 2, 1932).—A general discussion of the various departments of the paper mill.—A. P.-C.

Chemical Research Trends. Louis E. Wise. Paper Industry 14: 417-420 (Sept. 1932).—A brief discussion of the trend of recent fundamental investigations affecting the pulp and paper industry.—A. P.-C.

Rice Paper: An Ancient Chinese Contribution to Civilization. H. Gordon Thompson. Paper Maker & Brit. Paper Trade J. 83: TS167-172 (April 1, 1932).—A brief and profusely illustrated description of the production of hand-made paper in China.—A. P.-C.

Process for the Separation of Suspended or Dissolved Materials in Gasses or Liquids. A. H. Pehrson. Fin. pat. 14,066 (Oct. 6, 1927).—The gas is led through a revolving drum.—J. F. O.

The Conception of the Colloidal State in Relationship to Paper Making Problems. James Strachan. Paper Maker & Brit. Paper Trade J. 83: TS113-114 (March 1, 1932).—A brief explanation of the colloidal state, dealing

more particularly with the part which it plays in the various stages of paper manufacture.—A. P.-C.

Colloidal Chemistry. N. Wunderlich. Wochbl. Papierfabr. 63, No. 22: 419-422 (May 28, 1932).—An academic discussion of colloidal chemistry. Colloids are classed as such when the size of the particles are between 0.1u to 1uu.—J. F. O.

Permanence or Durability of Paper. Paul Klemm, Wochbl. Papierfabr. 63, No. 32: 607-09; No. 33: 625-27 (Aug. 6, 13, 1932).—The author begins by a general discussion of the subject, and then asks what is really meant by permanence of paper. Permanence of paper is its resistance to atmospheric conditions and is determined by the resistance of its components, especially its fibrous component. The purity of the fiber and the acidity of the paper are governing factors which are discussed in detail.—J. F. O.

Rosin Difficulties. Otto Brune. Wochbl. Papierfabr. 63, No. 29: 550-52 (July 16, 1932).—The cause of the rosin forming into small balls is air bubbles which rising up through the stock suspension gather with it the rosin and fat specks. The effect of temperature is shown by rosin formation at the head box and other places on the machine. The author illustrates different types of mix or flow boxes and shows how the trapped air bubbles results in rosin deposits and specks.—J. F. O.

Rosin Difficulties. Wochbl. Papierfabr. 63, No. 37: 695 (Sept. 10, 1932).—More concerning the causes and means of removing rosin difficulties.—J. F. O.

White Water Problem in the Pulp and Paper Industry. Haupt, Bautzen. Tech. Chemie Papier Zellstoff Fabr. 27, No. 5: 65-70 (May 31, 1930).—The author discusses the ability of the rivers to clear up themselves stating that this is almost impossible now, and he also discusses the limits in the amount of white water that the river can handle. In conclusion, a save-all is recommended, evaporation of the waste liquors and the recovery of heat and by-products.—J. F. O.

Reviewing the Problem of Consistency Regulation. E. Born. Papier-Fabr. 30, No. 31: 481-86; No. 32: 493-96; No. 33: 506-10; No. 34: 520-22 (July 31, Aug. 7, 21, 1932).—The results of numerous experiments on consistency regulators are given, the author investigated the Meyer-Mesco and Arca regulators to find out whether they actually did what they were built for. In one experiment the stock varied 41 per cent in consistency and by means of an Arca regulator this variation was decreased to only 2 per cent. With fast machines, regulators which are too sensitive should not be used, the Arca regulator is inclined to dampen. Because of the great variations in consistency of the beaters, a constant regulator should be used. The author discusses the principle of consistency regulators and the methods of operation. A great mass of data and curves are added.—J. F. O.

Electricity in Paper and its Neutralization. Wochbl. Papierfabr. 63, No. 34: 644-45 (Aug. 20, 1932).—The author tells of the difficulty of removing static from paper and the impossibility of removing it all. Electrical neutralizers and other such machines removes the charges from the paper at the time and place, after which the paper is liable to become charged again.—J. F. O.

Electric Trucks for Pulp and Paper Mills. Hans Kohtz. Wochbl. Papierfabr. 63, No. 38: 711-13 (Sept. 17, 1932).—General discussion of electric trucks, their use and construction, especially those trucks manufactured by Siemens-Schuckert.—J. F. O.

The Influence of the Hydrogen ion Concentration (pH) on the Color of the Paper. S. Pestalozzi. Zellstoff Papier 12, No. 6; 238-39 (June, 1932).—The author shows the great importance of hydrogen ion control by giving several examples of various dyes which changes color or intensity of color with different pH. The optimum pH for several dyes are given.—J. F. O.

United States Patents on Paper Making. Third Quarter, 1932. Clarence J. West. Paper Trade J. 95, No. 15: 40-42 (Oct. 13, 1932).—A list in numerical sequence of patents relating to pulp and paper making issued at Washington in July, August and September, 1932.—A. P.-C.

Paper Manufacturing in the South Assuming Greater Importance. Warren T. White. Paper Trade J. 95, No. 17: 26, 28 (Oct. 27, 1932).—A brief outline of the advantages of the southern United States for the manufacture of pulp and paper.—A. P.-C.

Meeting of the German Pulp and Paper Association in Munich, June 7-9, 1932. Papier-Fabr. 30, No. 25: 409-15 (June 19, 1932).—The various addresses by the officers of the association are given in full.—J. F. O.

New Results and Progress in Cellulose Technique. Erik Hägglund. Tek. Tid. Uppl. C, Kemi 62: 49-56, 60-64 (1932); C. A. 26: 6119.—Recent improvements in the methods of removing bark from wood for cellulose manufacture are described and illustrated. Improvements in the sulphite and sulphate pulp manufacturing processes are discussed and a number of mechanical details are shown. The advantages of high lime and sulphur dioxide contents during the boiling processes are pointed out. The yield of sugars in the sulphite liquor decreased with increasing amounts of lime. Under normal conditions 30-40 per cent of the sugars are changed during the boiling process in such a way that they cannot be fermented. A closer investigation showed, however, that the sugars (mannose, xylose and glucose) were oxidized by the bisulphite ion during the boiling, forming mannonic, xylonic and gluconic acids, respectively. This oxidation thus explains the formation of cymene from the terpenes in the wood during the boiling process.—C. J. W.

10 Year Economic Statistical Division of the Paper, Board and Wood Pulp Industries. Wochbl. Papierfabr. 63, No. 23A: 51-52 (June 4, 1932).—Important statistics of the German pulp and paper industry are given. In 1931, 64 per cent of all the paper was used as writing and printing, 31 per cent for wrapping and the remainder miscellaneous. 78 per cent of all the paper produced was consumed in the home market, the remainder exported.—J. F. O.

Germany's Export Trade in Wood for Paper Manufacture, Paper Stock, Board, Paper and Paper Goods in the Year 1931. Walther Schmidt, Dessau, Wochbl. Papierfabr. 63, No. 23A: 52-56 (June 4, 1932).—All vital statistics are given.—J. F. O.

Germany's Export Trade in Wood for Paper Manufacture, Paper Stock, Board, Paper and Paper Goods in the Year 1930. Walther Schmidt. Wochbl. Papierfabr. 62, No. 23A: 91-99 (June 6, 1931).—All vital statistics are given.—J. F. O.

The Production of Paper and Board in the World in the Year 1929. Mirus. Wochbl. Papierfabr. 62, No. 23A: 90 (June 6, 1931).—17,067,000 metric tons of paper produced and 5,818,000 tons of board. The United States producing 5,881,000 metric tons of paper and 4,082,000 tons of board.—J. F. O.

Paper and Printing Technology. Julius Bekk. Papier-Fabr. 30, No. 28: 445-48 (July 10, 1932).—Discussion of the necessity and the problems of paper testing for printing qualities. Testing of the paper for certain properties according to the type of printing. Surface properties, smoothness, absorption, etc. are among the important tests.—J. F. O.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING JUNE 3, 1933

CIGARETTE PAPER

American Tobacco Co., American Importer, Havre, 50 cs.; De Manduit Paper Corp., American Importer, Havre, 78 cs.; American Tobacco Co., Collamer, Havre, 100 cs.; American Tobacco Co., Champlain, Havre, 100 cs.; Champagne Paper Corp., Champlain, Havre, 10 cs.; Standard Products Corp., Champlain, Havre, 107 cs.; Standard Products Corp., Washington, Havre, 30 cs.; American Tobacco Co., Washington, Havre, 100 cs.; American Tobacco Co., Liberty, Havre, 100 cs.; Champagne Paper Corp., Liberty, Havre, 311 cs.

WALL PAPER

J. E. Bernard & Co., Europa, Bremen, 2 bls.; ——, Deutschland, Hamburg, 6 cs.; A. L. Diament & Co., Berengaria, Southampton, 2 cs.

NEWS PRINT

Perkins Goodwin & Co., American Importer, Hamburg, 372 rolls; Perkins Goodwin & Co., Dresden, Bremen 66 rolls; Jay Madden Corp., Dresden, Bremen, 135 rolls; Jay Madden Corp., Scanmail, Helsingfors, 248 rolls; H. Reeve Angel & Co. Inc., Scanmail, Helsingfors, 60 rolls, 6 bls.; ——, Bergensfjord, Oslo, 425 rolls; Gilman Paper Co., Svaneholm, Norrkoeping, 935 rolls; Brooklyn Times, Svaneholm, Norrkoeping, 422 rolls; Parsons & Whittemore, Inc., Svaneholm, Gothenburg, 37 rolls.

PRINTING PAPER

Winsor Newton, Inc., Franconia, Southampton, 3 cs.; International F'd'g Co., E. Francqui, Antwerp, 4 cs.; Atlantic F'd'g Co., Volendam, Rotterdam 13 cs.

WRAPPING PAPER

F. C. Strype, E. Francqui, Antwerp, 5 cs.; Walker Goulard Plehn Co., American Importer, Havre, 188 rolls.

FILTER PAPER

H. Reeve Angel & Co., Inc., Franconia, Southampton, 12 cs.; H. Reeve Angel & Co., Inc., Olympic, Southampton, 2 cs.; J. E. Bernard & Co., Liberty, Havre, 3 cs.

FILTER MASS

R. F. Downing & Co., Black Eagle, Rotterdam, 10 cs.

FILTER COMPOUND

A. Giese & Son, Deutschland, Hamburg, 30 bls.

BRISTOL BOARDS

Keuffel & Esser Co., Washington, Southampton, 2 cs.

SURFACE COATED PAPER

Gevaert Co. of America, Westernland, Antwerp, 9 cs.; Rothschild Import Co., Washington, Hamburg, 13 cs.; ——, Deutschland, Hamburg, 51 cs.; Phoenix Shipping Co., Deutschland, Hamburg, 3 cs.; Globe Shipping Co., Deutschland, Hamburg, 3 cs.

METAL COATED PAPER

——, American Importer, Hamburg, 27 cs.; Globe Shipping Co., Deutschland, Hamburg, 16 cs.

COATED PAPER

Chas. Happel, Washington, Hamburg, 29 cs.; Chas. Happel, Deutschland, Hamburg, 14 cs.

PHOTO PAPER

American Express Co., Deutschland, Hamburg, 12 cs.; J. J. Gavin, Berengaria, Southampton, 6 cs.

DECALCOMANIA PAPER

Sellers Transportation Co., Europa, Bremen, 7 cs.

TISSUE PAPER

B. F. Drakenfeld & Co., Britannic, Liverpool, 2 cs.; ——, Augustus, Genoa, 15 cs.; Van Oppen & Co., Excambion, Genoa, 39 cs.; Jay Madden Corp., Scanmail, Helsingfors, 25 bbls.

LITMUS PAPER

Phoenix Shipping Co., American Importer, Hamburg, 1 cs.

WRITING PAPER

Japan Paper Co., Champlain, Havre, 3 cs.

SILK PAPER

Van Oppen & Co., Excambion, Marseilles, 8 cs.

RAW CARD

F. C. Strype, Dresden, Bremen, 2 cs.

GUMMED PAPER

Heemsoth Basse & Co., Europa, Bremen, 5 cs.

STRAW BOARDS

Famous Paper-box Co., Volendam, Rotterdam 1,000 pkgs.; American Paper Tube Products Co., Volendam, Rotterdam 134 rolls.

WOOD PULP PAPER

A. Giese & Co., Volendam, Rotterdam, 10 cs.

MISCELLANEOUS PAPER

Satisfaction Supply Co., American Importer, Havre, 10 bls.; R. Wilson Paper Corp., Caledonia, Glasgow, 9 cs.; Coty Processing Co., Champlain, Havre, 22 cs.; Devoe & Raynolds Co., Champlain, Havre, 1 cs.; A. Stein, Champlain, Havre, 23 cs.; The Borregaard Co. Inc., Kungsholm, Gothenburg, 111 rolls; W. Bersch, Deutschland, Hamburg, 1 cs.; T. N. Fairbanks, Berengaria, Southampton, 1 cs.

RAGS, BAGGINGS, ETC.

——, Franconia, Southampton, 100 bls. paper stock; Irving Trust Co., Collamer, Havre, 34 bls. rags; J. Flannery, Collamer, Havre, 35 bls. rags; M. Snedeker Corp., Caledonia, Glasgow, 49 bls. paper stock; J. Cohen Sons, Britannic, Liverpool, 24 bls. rags; ——, American Farmer, London, 33 bls. rags; Irving Trust Co., Dresden, Bremen, 166 bls. rags; Amtorg Trading Corp., Scanmail, Leningrad, 826 bls. rags; E. J. Keller Co. Inc., Liberty, —, 188 bls. bagging; ——, Liberty, Havre, 21 bls. rags.

OLD ROPE

——, Caledonia, Glasgow, 53 coils; W. Steck & Co., Black Eagle, Rotterdam, 42 bls.; Irving Trust Co., Volendam, Rotterdam, 40 bls.; W. Steck & Co., Volendam, Rotterdam, 152 coils; National City Bank, Montreal City, Bristol, 162 coils; A. S. Wilson Inc., Montreal City, Bristol, 192 coils; Banco Coml Italiane Trust Co., Washington, Hamburg, 34 coils; Continental Bank Trust Co., M. de Comillas, Cadiz, 168 bls.; Continental Bank Trust Co., M. de Comillas, Vigo, 152 bls.

CHINA CLAY

L. A. Salomon & Bro., Britannic, Liverpool, 140 bags; ——, Montreal City, Bristol, 25 casks; Moore & Munger, Montreal City, Fowey, 418 tons, 11 cwt.

CASEIN

——, Deutschland, Hamburg, 60 bags.

GLUE STOCK, ETC.

——, Deutschland, Hamburg, 22 bags hide glue; ——, Deutschland, Hamburg, 250 bags bone glue.

WOOD PULP

——, Simon von Utrecht, Stugsund, 150 bls. sulphite, 50 tons; ——, Simon von Utrecht, Stugsund, 1,750 bls. sulphate, 350 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 2,780 bls. sulphite, 515 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 1,200 bls. sulphate, 203 tons; Continental Bank Trust Co., Simon von Utrecht, Hernosand, 750 bls. sulphate, 125 tons; Continental Bank Trust Co., Simon von Utrecht, Hernosand, 600 bls. sulphite, 100 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Obbola, 350 bls. sulphate, 50 tons; ——, Dresden, Bremen, 1,200 bls. wood pulp; Lagerloef Trading Co., Scanmail, Helsingfors, 658 bls. sulphite, 111 tons; J. Andersen & Co., Kungsholm, Gothenburg, 375 bls. wood pulp; Johaneson Wales & Sparre, Inc., Kungsholm, Gothenburg, 127 bls. sulphite; E. M. Sergeant & Co., Kungsholm, Gothenburg, 897 bls. kraft soda; ——, Washington, Hamburg, 700 bls. wood pulp, 109 tons; Atterbury Bros. Inc., Bergensfjord, Oslo, 2,000 bls. chemical pulp; Gottesman & Co. Inc., Svaneholm, Gothenburg, 1,500 bls. sulphate.

ALBANY IMPORTS

WEEK ENDING JUNE 3, 1933

——, Simon von Utrecht, Stugsund, 1,250 bls. sulphite, 250 tons; —— Simon von Utrecht, Stugsund, 1,000 bls. sulphate, 200 tons— Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 473 bls. sulphite, 83 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 675 bls. chemical pulp, 136 tons; Bulkley Dunton & Co., Simon von Utrecht, ——, 900 bls. sulphate, 152 tons; Halifax Power & Pulp Co., Kem Sheet Harbor, ——, 7,393 bls. ground pulp, 1,651 tons.

PORTLAND IMPORTS

WEEK ENDING JUNE 3, 1933

——, Simon von Utrecht, Hernosand, 1,050 bls. sulphite, 175 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 2,700 bls. sulphite, 457 tons; Bulkley Dunton & Co., Simon von Utrecht, ——, 2,500 bls. sulphite, 508 tons.

BOSTON IMPORTS

WEEK ENDING JUNE 3, 1933

——, Simon von Utrecht, Stugsund, 750 bls. sulphite, 150 tons; Bulkley Dunton & Co., Simon von Utrecht, ——, 375 bls. chemical pulp, 76 tons; Bulkley Dunton Co., Simon von Utrecht, ——, 2,400 bls. sulphate, 406 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 500 bls. sulphite, 101 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 1,920 bls. sulphate, 324 tons; Perkins Goodwin & Co., Simon von Utrecht, Sundsvall, 125 bls. sulphite, 25 tons.

PHILADELPHIA IMPORTS

WEEK ENDING JUNE 3, 1933

Castle & Overton, Inc., Collamer, Havre, 72 bls. rags; E. J. Keller Co. Inc., Collamer, ——, 239 bls. rags; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 3,000 bls. sulphite, 508 tons; Parsons & Whittemore, Inc., Simon von Utrecht, Sundsvall, 50 rolls news print; Bulkley Dunton & Co., Simon von Utrecht, ——, 1,000 bls. sulphite, 203 tons; English China Clay Sales Corp., Montreal City, Fowey, 1,173 tons, 5 cwt china clay; Lagerloef Trading Co., Scanmail, Helsingfors, 1,724 bls. sulphite, 314 tons; J. W. Hampton, Jr., Scanmail, Helsingfors, 73 rolls news print; Jay Madden Corp., Scanmail, Helsingfors, 25 bbls. tissue paper; Gilman Paper Co., Svaneholm, Norrkoeping, 531 rolls news print; Perkins Goodwin & Co., Svaneholm, Gothenburg, 508 bls. sulphate; Parsons & Whittemore, Inc., Svaneholm, Gothenburg, 69 rolls news print; The Borregaard Co., Inc., Svaneholm, Gothenburg, 128 rolls paper; Gottesman & Co. Inc., Svaneholm, Halmstad, 525 bls. sulphite.

CAMDEN IMPORTS

WEEK ENDING JUNE 3, 1933

Johaneson Wales & Sparre, Inc., Simon von Utrecht, Obbola, 1,050 bls. sulphate, 150 tons; Continental Bank Trust Co., Simon von Utrecht, Hernosand, 300 bls. sulphate, 50 tons; Bulkley Dunton & Co., Simon von Utrecht, ——, 300 bls. wood pulp, 50 tons; ——, Simon von Utrecht, Sarndarne, 500 bls. sulphate, 100 tons.

NEWPORT NEWS IMPORTS

WEEK ENDING JUNE 3, 1933

——, Simon von Utrecht, Sarndarne, 5,250 bls. sulphate, 1,070 tons.

BALTIMORE IMPORTS

WEEK ENDING JUNE 3, 1933

——, Simon von Utrecht, Sarndarne, 375 bls. sulphate, 75 tons; Continental Bank Trust Co., Simon von Utrecht, Hernosand, 600 bls. sulphate, 100 tons; Continental Bank Trust Co., Simon von Utrecht, Hernosand, 300 bls. sulphite, 50 tons; Mead Sales Co., Simon von Utrecht, Sundsvall, 4,200 bls. sulphite, 711 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 2,075 bls. sulphite, 418 tons; Parsons & Whittemore, Inc., Simon von Utrecht, Sundsvall, 147 rolls news print; Congoleum Nairn Co., Liberty, Havre, 201 bls. rags.

NORFOLK IMPORTS

WEEK ENDING JUNE 3, 1933

Chase National Bank, Liberty, Dunkirk, 115 bls. bagging.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, June 7, 1933.

Trading in the local paper market was quite active during the past week. The various standard grades of paper are moving in satisfactory volume. Sales forces of the leading paper organizations are more optimistic than for some time past. Prices are generally steady to firm and shading is infrequent.

The position of the news print paper market is practically unchanged, although efforts to stabilize the industry have not been abandoned. Production in the North American mills is being maintained in sufficient volume to take care of current requirements. The price situation continues unsatisfactory.

Some improvement was noticed in the paper board market. Box board quotations are much firmer. The fine paper market is exhibiting a strong undertone. Tissues are moving in good volume. The coarse paper market is also more buoyant. Prices of No. 2 kraft again advanced, and have apparently not yet reached their peak.

Mechanical Pulp

The ground wood pulp market is decidedly firm. Both domestic and imported grades of mechanical pulp are in better request. Shipments against contract are going forward in seasonal volume. Prices are steady and the recently advanced quotations on imported ground wood pulp are well maintained.

Chemical Pulp

Sentiment in the chemical pulp market is more optimistic. It is reported that some large European bleached sulphite manufacturers have disposed of their entire production for this year and for that reason prices on several grades have advanced. Quite a few unbleached sulphite and kraft pulp mills are accepting orders at prevailing prices for the balance of this year and 1934.

Old Rope and Bagging

The old rope market is steady to firm. Demand for both domestic and imported old manila rope is better. Quotations on foreign old manila rope have again advanced. Small mixed rope is steady. The bagging market is stronger. Foreign and domestic gunny bagging No. 1 is now quoted at from 1.05 to 1.15.

Rags

Paper mill request for the various grades of domestic rags is heavy, and, as offerings are scarce, prices are much firmer. New cotton cuttings continue to advance. Greater interest is being displayed in No. 1 white shirt cuttings, both at home and abroad. The foreign rag market is firmer, especially roofing grades.

Waste Paper

The paper stock market continues buoyant. While board mill demand for the lower grades is persistent, offerings are very limited. Quotations on strictly folded news and No. 1 mixed paper are very firm. The higher grades of waste paper are holding up well. Hard and soft white shavings and book stock continue steady.

Twine

Business in the local twine market is proceeding in satisfactory volume for the season. Supplies are moving into consumption at a fairly steady pace. Recently advanced quotations on many of the grades are well maintained and there is little talk of concessions around.

Finch, Pruyn & Co. Reduce Wages

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., May 29, 1933.—An agreement was reached this week between officials of Finch, Pruyn & Co. and union employees whereby a wage reduction of five per cent will become effective. The reduction compared with similar decreases recently announced by competitors and brings the scale to about seventeen per cent lower than the peak scale of 1929. It is said that competitors have placed in effect wage cuts from 20 to 35 per cent since that time. The company claims that it has always followed the policy of observing the same scale as competitors and it is understood that employees are satisfied.

Among those attending the conference were the leading officials of the company. Officials of the International Brotherhood of Papermakers were in attendance while delegates from the various unions connected with the plant also were present.

State Pays Wheelwright for Damages

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 5, 1933—The check for $35,000 from the Commonwealth of Massachusetts has been received by the receivers of the George W. Wheelwright Paper Company, Leominster, Mass., in payment for damages caused the company by the diversion of the Ware River from the Hardwick Mill of the company at Hardwick, Mass. The company brought suit for $100,000. George Alpert, who is handling the legal aspect of the receivership for the others, George W. Wheelwright and Carl F. Woods, says that a dividend will be paid to creditors very soon.

New Sample Book of Brown's Linen Ledger

The L. L. Brown Paper Company, Adams, Mass., has issued a new sample book of Brown's Linen Ledger to show the further refinement of quality and the increased value which now characterize this supremely fine, permanent record paper.

In its new form, the book is considerably more convenient for reference purposes and has greater selling force. It is designed to help salesmen in demonstrating the distinctive properties which give maximum durability and economy to records which are made of Brown's Linen Ledger.

Copies may be had from the mill or its agents.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, June 7, 1933.

BLANC FIXE.—Demand for blanc fixe is fairly persistent. The contract movement is well up to average. The pulp is quoted at from $42.00 to $45.00 per ton, in bulk; while the powder is selling at from 3 to 3½ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Shipments against contract are moving in fairly good volume. Prices remain unchanged. Bleaching powder is quoted at from $1.75 to $2.00 per 100 pounds, in drums, at works.

CASEIN.—The casein market continues firm. Domestic casein is quoted at 10½ to 11 cents and finely ground at 11 to 11½ cents per pound. Argentine standard ground is selling at 9⅞ cents and finely ground at 10½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Supplies of caustic soda are moving into consumption in greater volume. Prices are steady. Solid caustic soda is quoted at from $2.55 to $3.00; while the flake and ground are selling at from $2.95 to $3.00 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market continues firm. Demand from the paper mills is improving. Imported china clay is quoted at from $12 to $17 per ton, ship side; while domestic paper making clay is selling at from $4.50 to $12 per ton, at mine.

CHLORINE.—Conditions in the chlorine market continue to improve. Contract shipments are moving in satisfactory volume. Prices are holding to schedule. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is firmer. The grades of gum rosin used in the paper mills are now quoted at from $4.60 to $4.85 per 280 pounds, in barrels, at works; while wood rosin is selling at $3.50 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Sentiment is improving in the salt cake market. Salt cake is now quoted at from $13.50 to $14; chrome salt cake at from $13 to $13.50 per ton, at works; while imported salt cake is selling at from $13.50 to $14 per ton, on dock.

SODA ASH.—The soda ash market is exhibiting a strong undertone. Demand is heavier than for some time past. Prices are firm. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1:30; and in barrels, $1.43.

STARCH.—Steadiness prevails in the starch market. The contract movement is seasonal. Prices are holding to schedule. Special paper making starch is quoted at $2.64 per 100 pounds, in bags; and at $2.91 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Trading in the sulphate of alumina market is quite active. Prices are holding to schedule. Commercial grades are quoted at from $1.25 to $1.46; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and nearby car loads, the quotation is $21 per ton.

TALC.—Business in the talc market shows signs of gaining. The contract movement is normal. Prices are steady. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at eastern mines; while imported talc is selling at from $18 to $22 per ton, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	38.00
Bonds	4.75	@	53.25
Index	6.00	@	12.00
Writings—			
Extra Superfine	6.50	@	15.00
Superfine	6.25	@	14.75
Tub sized	4.50	@	7.00
Engine sized	4.00	@	5.00
Book, Cased—			
S. & S. C.	4.25	@	5.00
M. F.	3.75	@	4.25
Coated and Enamel	5.00	@	9.00
Lithograph	5.00	@	9.00
Tissues—Per Ream—			
White No. 1	.50	@	.70
White No. 2	.45	@	.60
Anti-Tarnish M. G. only	.65	@	.70
Colored	.70	@	.90
Kraft	.65	@	.70
Manila	.55	@	.60
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.09¼	@	—
No. 2	.11¼	@	—
Bleached, basis 20 lbs.	.11¼	@	—

(Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Side Runs	25.00	@	—
Kraft—			
No. 1 Domestic	4.50	@	4.75
No. 2 Domestic	3.00	@	3.25
Southern	3.00	@	3.25
Imported	2.75	@	3.50
Boards per ton—			
News	35.00	@	37.50
Straw	29.50	@	31.50
Chip	32.50	@	35.00
Chip Boards			
Kraft Liner	45.00	@	47.50
Standard 85 Test Jute Liner	27.75	@	30.00
Sgl. Mla. Ll. Chip	42.50	@	45.00

(F. o. b. Mill)

Wood Pulp Boards	70.00	@	80.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	21.00	@	22.00
Dry	21.00	@	22.00

(F. o. b. Mill)

No. 1 Domestic and Canadian	14.00	@	22.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	1.90	@	2.40
Easy Bleaching	1.60	@	1.75
No. 1 strong unbleached	1.50	@	1.65
Mitscherlich unbleached	1.60	@	1.75
No. 2 strong unbleached	1.35	@	1.40
No. 1 Kraft	1.25	@	1.45
No. 2 Kraft	1.10	@	1.15
Sulphate—			
Bleached	1.85	@	2.15

(F. o. b. Pulp Mill)

Sulphite (Domestic and Canadian)—			
Bleached	1.75	@	3.75
Easy Bleaching	1.60	@	1.75
News	1.40	@	1.65
Mitscherlich unbleached	2.00	@	2.25
Kraft (Domestic)	1.25	@	2.75

(Delivered Paper Mills)

Soda Bleached	2.00	@	—

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	3.80	@	4.25
Silesias No. 1	3.00	@	3.25
New Unbleached	5.25	@	5.75
New Soft Blacks	2.75	@	3.00
Blue Overall	2.50	@	3.00
Fancy	1.25	@	1.50
Washables	1.00	@	1.25
Mixed Khaki Cuttings	2.25	@	2.50
O. D. Khaki Cuttings	2.50	@	3.00
Men's Corduroy	1.00	@	—
New Mixed Blacks	2.25	@	2.50

Old Rags

White, No. 1—			
Repacked	3.00	@	3.25
Miscellaneous	2.00	@	2.25
White, No. 2—			
Repacked	1.75	@	2.00
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.00	@	1.25
Black Stockings	2.00	@	2.25
Roofing Rags—			
No. 1	.60	@	.70
No. 2	.50	@	.60
No. 3	.45	@	.50
No. 4	.40	@	.45
No. 5A	.35	@	.40

Foreign Rags

New Rags

New Dark Cuttings	1.50	@	1.60
New Mixed Cuttings	1.60	@	1.70
New Light Silesias	3.25	@	3.50
Light Flannelettes	3.00	@	3.25
Unbleached Cuttings	5.00	@	5.25
New White Cuttings	4.50	@	4.75
New Light Oxfords	3.25	@	3.50
New Light Prints	2.00	@	2.25

Old Rags

No. 1 White Linens	6.00	@	6.50
No. 2 White Linens	5.25	@	5.75
No. 3 White Linens	4.25	@	4.00
No. 4 White Linens	2.00	@	2.25
No. 1 White Cotton	3.75	@	4.00
No. 2 White Cotton	3.00	@	3.25
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.50	@	1.60
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.65	@	1.80
French Blue Linens	2.10	@	2.25
German Blue Linens	1.85	@	2.00
German Blue Cottons	1.35	@	1.50
Checks and Blues	1.30	@	1.40
Lindsay Garments	1.00	@	1.10
Dark Cottons	.90	@	1.00
Old Shopperies	.85	@	.90
New Shopperies	.80	@	.85
French Blues	1.50	@	1.65

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1			
Foreign	1.05	@	1.15
Domestic	1.05	@	1.15
Wool Tares, light	.90	@	1.00
Wool Tares, heavy	.90	@	1.00
Bright Bagging	.90	@	.95
Manila Rope—			
Foreign	1.75	@	1.85
Domestic	1.60	@	1.75
Small Mixed Rope	.60	@	.65
New Burlap Cut	1.25	@	1.50
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.05	@	2.15
Ordinary Hard White No. 1	1.70	@	1.80
Hard White No. 2	1.50	@	1.60
Soft White No. 1	1.45	@	1.55
Flat Stock—			
Stitchless	.70	@	.75
Overissue Mag.	.70	@	.75
Solid Flat Book	.60	@	.70
Crumpled No. 1	.45	@	.50
Solid Book Ledger	1.50	@	1.75
Ledger Stock	.45	@	.5
New B. B. Chips	.20	@	.25
Manilas—			
New Env. Cut	1.35	@	1.45
New Cuttings	1.00	@	1.05
Extra No. 1 old	.80	@	.90
Print	.35	@	.40
Bogus Wrapper	.30	@	.35
Container	.25	@	.30
Old Kraft Machine—			
Compressed bales	.75	@	.80
News—			
No. 1 White News	1.00	@	1.05
Strictly Overissue	.50	@	.55
Strictly Folded	.45	@	.50
No. 1 Mixed Paper	.42	@	.48

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A study of the Directory of The Fifth Avenue Building reveals a long list of names famous in many and varied lines of industry. It is a veritable Blue Book of trade leaders. Among the many lines represented by the clientele of this famous building are leaders in paper and pulp manufacturing, paper merchants, paper mill agents, paper mill supplies, paper and pulp mill engineers, paper-box board and paper products manufacturers. Also located in The Fifth Avenue Building are leaders in stationery, greeting cards, gifts, novelties, electrical goods, housefurnishings, office equipment, china, glass, toys and many others. Here buyers can place orders for the entire season without leaving the building, serviced by every convenience a modern office building affords.

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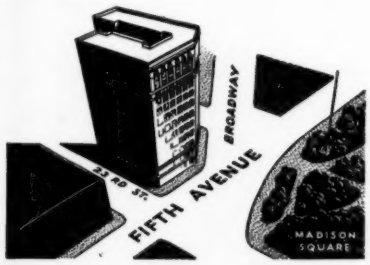

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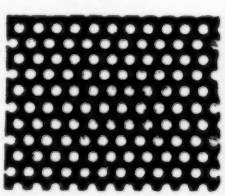

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Twines

(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.11¾	@	.12¾
Jute Rope—			
4-ply and larger	.08¼	@	.10¼
Fine Jute Rope—			
4-ply	.12¼	@	.12¾
3-ply	.13¼	@	.13¾
2-ply	.14¼	@	.14¾
Paper Makers Twine			
Balls	.09¼	@	.11¼
Box Twine, 2-3 ply	.11¼	@	.12¾
Jute Rope	.09	@	.10
White Hemp	.12¾	@	.15¾
Java Sisal—			
No. 1 Basis	.11½	@	—
No. 2 Basis	.10½	@	—
New Zealand Sisal	.11½	@	—
Sisal Lath Yarn—			
No. 1	.13½	@	.15½
No. 2	.11½	@	.13½
Manila Twine	.24½	@	.29½

CHICAGO

Paper

(F. o. b. Mill)

Bag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.04	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.07	@	.18
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¼
No. 1 Fibre	.04¾	@	.05¾
No. 2 Manila	.04½	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	3.50	@	4.50
Southern Kraft	2.62½	@	—
No. 2 Kraft	2.62½	@	—
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03½
Manila Tissue	.07	@	.07½
White Tissue	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	45.00	@	—
Sheets	50.00	@	—
Boards, per ton—			
Plain Chip	27.50	@	—
Solid News	30.00	@	—
Manila Lined Chip	37.50	@	—
Patent coated	47.50	@	—
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.50	@	1.55
No. 1 Hard White	1.40	@	1.45
No. 1 Soft White	1.00	@	1.10
Ledger & Writings	.55	@	.60
Solid Books	.45	@	.50
Blanks	1.00	@	1.05
Krafts	.70	@	.80
New Kraft Cuts	1.15	@	1.25
Manila Env. Cuts	1.25	@	1.30
Ex. No 1 Manila	.90	@	1.00
Print Manila	.30	@	.40
Overissue News	.45	@	.50
Old Newspapers—			
No. 1	.45	@	.50
Mixed Papers—			
No. 1	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.09
Manila Sul., No. 1	.03	@	.05
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	03¾	@	.04¾
Southern Kraft	2.75	@	4.00
Common Bogus	.03	@	.04

(Delivered Philadelphia)

News Print Rolls	46.00	@	—
Straw Board	32.00	@	—
News Board	30.00	@	—
Chip Board	30.00	@	—
Wood Pulp Board	70.00	@	80.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	62.00	@	65.00
Carload lots	60.00	@	65.00
Tarred Felts—			
Regular	32.25	@	34.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01	@	.01½
Blue Overall	.03	@	.03½
Cottons—According to grades—			
Washable, No. 2	.01	@	.02
New Blue	.01	@	.02
Fancy	.01½	@	—
New Black Soft	.02	@	.03
New Light Seconds	.01	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O.D.	.03	@	.03½
No. 2 Mixed	.02½	@	.03
Corduroy	.02	@	.02½
New Canvas	.03½	@	.04
New Black Mixed	.02½	@	.03

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.00
Miscellaneous	1.75	@	2.00
M. G.	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.80

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	—
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	1.65	@	1.70
No. 2 Hard White	1.50	@	1.60
No. 1 Soft White	1.40	@	1.45
No. 2 Soft White	1.10	@	1.15
No. 1 Mixed	.50	@	.60
No. 2 Mixed	.40	@	.50
Solid Ledger Stock	1.20	@	1.25
Writing Paper	.70	@	.75
No. 1 Books, heavy	.55	@	.60
No. 2 Books, light	.40	@	.45
No. 1 New Manila	1.20	@	1.25
No. 1 Old Manila	.60	@	.65
Print Manila	.40	@	.50
Container Manila	.40	@	.50
Old Kraft	.80	@	.85
Common Paper	.30	@	.35
No. 1 Mixed Paper	.30	@	.35
Straw Board, Chip	.25	@	.30
Binders Board Chip	.30	@	.35
Corrugated Board	.40	@	.50
Overissue News	.50	@	.60
Old Newspaper	.40	@	.50

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05¾	@	.11½
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	—	@	.04¾
No. 2 Kraft	.03	@	—

(F. o. b. Boston)

Southern Kraft	.02¾	@	—

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¾

(Delivered New England points)

News Print, rolls	44.50	@	—
Straw Board, rolls	.009	—	@35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	32.50	@	—
Chip Board	30.00	@	—
Chip Board (Creasing)	27.50	@	30.00
Single Manila Lined Chip	40.00	@	—
Single White, Patent Coated News Board—			
Bender	50.00	@	57.50
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Soft White	1.40	@	1.70
No. 1 Old Manila	.50	@	.60
No. 1 Mixed	.60	@	.70
No. 2 Mixed	.40	@	.50
Solid Ledger Books	1.20	@	1.40
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.60	@	.70
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	—	@	.30
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.50	@	.60
White Blank News	1.00	@	1.05
No. 1 Kraft	.85	@	.95
Manila	.80	@	.90
No. 1 Mixed Papers	.42½	@	.45
Print Manila	.55	@	.60
Overissue News	.55	@	.60
Old Newspapers	.45	@	.50
Box Board Chips	.40	@	.42½
Corrugated Boxes	.45	@	.50
Screenings Wrappers	.45	@	.50

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	1.55	@	1.70
Domestic	1.55	@	1.75
Transmission Rope	1.20	@	—
Mixed Strings	.25	@	.30
Jute Rope	.85	@	—
Jute Carpet Threads	.25	@	.30
Gunny No. 1—			
Foreign	1.20	@	—
Domestic	.70	@	.80
Bleachery Burlap	1.90	@	2.00
Scrap Burlap	.65	@	.75
No. 1 Scrap Burlap	.75	@	.80
Scrap Sisal	.80	@	1.00
Scrap Sisal for shredding	—	@	.90
Wool Tares, heavy	.90	@	1.00
New Burlap Cutting	.75	@	.90
Australian Wool Pouches	2.00	@	2.25
Heavy Baling Bagging	1.00	@	1.25
Paper Mill Bagging	.55	@	.65
Bagging No. 2	.45	@	.50
No. 1 Burlap	1.75	@	2.00

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	—	@	.01½
New White No. 1	.05½	@	—
New White No. 2	.04½	@	.05
Silesias No. 1	.03½	@	—
New Black Silesias	.02½	@	.03
New Unbleached	.06	@	—
Fancy	—	@	.02½
Washable	—	@	.01½
Cottons—According to grades—			
Blue Overalls	—	@	.03¼
New Black, soft	.04	@	.04½
Khaki Cuttings	.03	@	.03¼
O. D. Khaki	.03	@	.03¼
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	.04	@	.04¼

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	—
White No. 2—			
Repacked	.01½	@	.01¾
Miscellaneous	.01½	@	.01¾
Twos and Blues	1.25	@	1.50
Thirds and Blues			
Repacked	1.10	@	1.25
Miscellaneous	.85	@	.90
Black Stockings	2.25	@	2.50
Roofing Stock			
No. 1	.85	@	.95
No. 2	.65	@	.75
No. 3	.50	@	.55

Foreign Rags

(F. o. b. Boston)

Dark Cottons	.85	@	1.00
New No. White Shirt Cuttings	.04½	@	.05
Dutch Blues	1.50	@	1.75
New Checks & Blues	2.25	@	2.50
Old Fustians	1.15	@	—
Old Linsey Garments	.90	@	1.05

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.09¾	@	—
No. 2 Sulphite	.08	@	—
No. 1 Colored	.10¼	@	—
No. 2 Colored	.08½	@	.10½
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.20	@	—
No. 3 M. F. (Carloads)	5.70	@	—
No. 4 M. F. (carloads)	4.75	@	—
No. 1 S. C. (carloads)	6.65	@	—
No. 3 S. C. (carloads)	6.20	@	—
No. 4 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.25	@	—
White Wrap	2.00	@	—
"B" Manila	4.75	@	—
No. 1 Manila	5.25	@	—
Fiber	5.25	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.25	@	—

(F.O.B. Cars Toronto)

News, per ton—			
Rolls (contract)	45.50	@	—
Sheets	50.50	@	—

Pulp

(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	45.00	@	50.00
Sulphate	50.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	1.80	@	—
Soft White	1.40	@	—
White Blk. News	1.25	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	—
Light and Crumpled Book Stock	.80	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut	1.25	@	—
Printed Manilas	.55	@	—
Fancy Shirt Cuttings	.02¼	@	.02½
Kraft	1.25	@	—
News and Scrap—			
Strictly Overissue	.50	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags

(Price to mills f. o. b. Toronto)

No. 1 White Shirt Cuttings	.04¼	@	.04¾

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